Pests

AND THEIR CONTROL

1946

APRIL

VOL. 14, NO. 4

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators
Fumigators
Termite Control Operators
Entomologists
Insecticide and Supply Mfgrs.

Safety pays-when you fumigate with "CYANEGG"

FOR THOROUGH, effective fumigating with Du Pont "Cyanegg," remember to seal all doors and windows in the building. This safety measure is another step in assuring completely satisfactory fumigation. Remember too that "Cyanegg" is easy to use—requires only simple equipment—does an efficient job. For more information that will help you with application of "Cyanegg," just write: E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

DU PONT "CYANEGG"

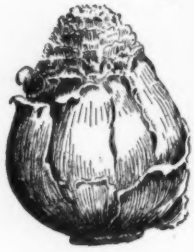
An Economical Source of HCN Fumigating Gas

DU PONT

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

FOR Tough Jobs

the Professional Exterminator prefers



HOPKINS' FORTIFIED REDRATSQUIL

(TRADE-MARK REG.)

We could save a lot of time and speed up the production of HOPKINS' REDRATSQUIL if we omitted just one item of processing—the Hopkins process of oven-drying. Why don't we? Because the Hopkins method of oven-drying at 176° F. delivers HIGHER KILLING POWER—a more dependable product—and, in the end, considerably greater economy.

For ANY job in general, and for the tough job in particular, HOPKINS' REDRATSQUIL can be counted on to do its work COMPLETELY, THOROUGHLY, SAFELY, in an EASY-TO-HANDLE way. It baits effectively with cereals, fish, fruits and vegetables. It is relatively non-poisonous to humans or domestic animals, functioning as a SPECIFIC for the killing of rats and house mice. It is guaranteed to meet the minimum lethal content of 500/600 mg/Kg established by the Fish and Wildlife Service of the U. S. Department of the Interior. It is OVEN-DRIED and Biologically Tested for high killing power. It is available in both Powder and Liquid form.

Your inquiry will promptly bring full information and prices.

HOPKINS' *Crow Brand* PYRETHRUM POWDER

and CONCENTRATED EXTRACTS

Made from 100% commercially pure Pyrethrum Flowers. Tested botanically, biologically and chemically. Every lot must meet or exceed our high standards for toxicity. Total Pyrethrin content must be stated by law. Therefore—"All our Pyrethrum products are assayed for total Pyrethrin content."

Write for full information and prices.

J. L. HOPKINS & CO.

Importers, Millers and Manufacturers

220 BROADWAY :: **NEW YORK 7, N. Y.**

Pests

and Their CONTROL

Exterminators, Fumigators, Termite Control Operators, Entomologists, Insecticide and Supply Manufacturers

COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

AL COSSETTA, *Editor*

MAX ROSENTHAL, *National Advertising Rep.*
126 Lexington Ave., N. Y. City, Phone Mu. 4-9000

PUBLICATION OFFICE, 1200 OAK ST., KANSAS CITY 6, MO., PHONE VICTOR 6332

VOL. 14, NO. 4 | APRIL, 1946 | ESTABLISHED 1933

NATIONAL PEST CONTROL ASSOCIATION, INC.

OFFICERS AND DIRECTORS

October 1944 — October 1945

PRESIDENT

Theodore Oser, 315 Peachtree St.....Atlanta, Ga.

REGIONAL VICE PRESIDENTS

H. O. Abel, 4320 Ross Ave.....Dallas, Texas
John G. Vogel, 2212 Chestnut St.....Philadelphia, Pa.
Ernest G. Mills, 163-2nd St.....San Francisco 5, Calif.
Harvey Klein, 1141 N. 3rd St.....Milwaukee, Wis.
J. Edwin Sameth, 1060 Broad St.....Newark 2, N. J.
J. Harvey Sturgeon, 112 E. Broadway.....Louisville, Ky.

SECRETARY

William O. Buettner, 3019 Ft. Hamilton Parkway.....Brooklyn 18, N. Y.

TREASURER

Robert C. Yeager, 100 East Court Street.....Cincinnati 2, Ohio

DIRECTORS

Three Years—1944-1947

Jerome L. Howell, 2403 S. Main.....Houston, Texas
Albert M. Akers, 2122 E. 2nd.....Cleveland, Ohio
Morton S. Prescott, 129 S. Laflin St.....Chicago 7, Ill.
Martin T. Meyer, 213 S. 10th St.....Philadelphia 7, Pa.
D. C. Tracy.....Los Angeles, Calif.
George Hemmert, 436 E. Woodbridge St.....Detroit, Mich.
Herbert Meyer, 165-33 Hillside Ave.....Jamaica, N. Y.

DIRECTORS

Two Years—1944-1946

Sidney Wimmer, 143 West 53rd Street.....New York, N. Y.
Henry Turrie, 512 W. North Avenue.....Milwaukee, Wisc.
Glenn H. Burnett, 92 Plaza Way, S. W.....Atlanta 3, Ga.
A. S. Krawcheck, 101 South 20th Street.....Birmingham, Ala.
J. Wilfred Gunn, 2903 Beverly Boulevard.....Los Angeles, Calif.
John Medoff, 445 63rd St.....West New York, N. J.
Mrs. Lavonne Rukin, 5955 W. 65th St.....Chicago, Ill.

DIRECTORS

One Year—1944-1945

Bert Lewis, 502 Rex Street.....Muncie, Ind.
E. N. Goldey, 263 West 54th Street.....New York, N. Y.
Louis Gatto, P. O. Box 65.....Beaver Falls, Pa.
V. H. Montgomery, 210 Post Street.....San Francisco 8, Calif.
Mrs. Ada Williams, Box 712.....Albuquerque, N. M.
William H. McCain, 11 N. St. Marys Street.....Dayton 2, Ohio
Joseph W. Hahne, 3837 South 23rd Street.....Omaha 7, Nebr.

CANADA

P. Henry Maheu, 3128 Masson Street.....Montreal, P. Q., Can.

PAST PRESIDENTS

William O. Buettner, 3019 Ft Hamilton Parkway.....Brooklyn 18, N. Y.
Thomas C. Raley, 1135 Pine Street.....St. Louis 1, Mo.
C. Norman Dold, 6 East Lake Street.....Chicago 1, Ill.
Bartlett W. Eldredge, 118 Calvary Street.....Waltham 54, Mass.
H. K. Steckel, 113 West Rich Street.....Columbus 15, Ohio
*H. G. Irving Sameth, 200 Fifth Avenue.....New York 10, N. Y.
Walter S. McCloud, 612 N. Michigan Avenue.....Chicago 11, Ill.
*L. R. Alderman, 1811 E. Walnut Street.....Pasadena 8, Calif.
P. Calvert Cissel, 928 Eye St., N. W.....Washington 1, D. C.
F. E. Bohman, 173 Church Street.....Hartford 3, Conn.
George R. Elliott, 58 Front St.....Worcester 8, Mass.

*Deceased.

STATEMENT

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

For further details, communicate with
WILLIAM O. BUETTNER, Secretary
3019 Fort Hamilton Parkway Brooklyn, New York

CONTENTS

"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."

Editorial 4

Insecticide Solvents For DDT 5
By W. E. McCauley

Sixth Southern Pest Control Operators' Conference, Louisiana State University, Baton Rouge, La. February 14, 15, 16 6

Good Housekeeping in Food and Drug Establishments 8
By Cyril C. Sullivan

Calendar of Meetings 12

Some Insect Pests of the Household 14
By A. E. Michelbacher

Practical Uses of DDT in Insect Premise Sanitation 20
By S. W. Simmons and E. H. Arnold

Hill Termite Control System 24
By W. B. Hill

Historic New Orleans 30

Additional Patents Relating to Pest Control 36
By Dr. R. C. Roark

What's New in Pest Control—Personals 38

Local Organization News 42

Books 46

Write For These Booklets 48

Published monthly by PESTS, 1200 Oak Street, Kansas City, Missouri. Subscription rate in the United States and Possessions $3.00 per year; Foreign $4.00 per year. Publishers not responsible for unsolicited manuscripts. No manuscripts will be returned. All advertising copy and contributions must be in our hands by the 15th of the preceding month of the issue in which they are to appear. Three weeks' advance notice necessary for change of address. Both old and new address must be given. Entered as second-class matter November 15, 1945, at the post office at Kansas City, Mo. under the Act of March 3, 1879.

EDITORIAL

Our Profession and the Public

MORE AND MORE, as our industry becomes felt as a strongly organized profession, we must realize our responsibilities as Pest Control Operators. Serious problems—rodent-control ordinances, fumigation ordinances, and other factors—are forcing city, state, and federal officials to take steps in trying to bring about some kind of precaution measures to promote the elimination of hazards that every now and then bob up, because of preventable accidents. While these disturbing problems are more serious than some realize, the fact remains that unless every PCO carries out his service in a more careful way, he will find himself in a real dilemma. Too much emphasis can scarcely be placed on professional training. Few other types of business require such demands of their operators as the National Pest Control Association. Why? Because of the hazards involved in careless servicing of homes, buildings, and public institutions.

Characteristics otherwise so tremendously vital to the progress and success of PCO's — patience, tact, diplomacy, and astuteness, are even less necessary than caution and carefulness in the performance of a job. Unless there is an awakening among the PCO's and in the entire industry, of their responsibility to the public, we will be confronted with legislation that will not be pleasant. Some such laws are already in effect, and drastic laws and ordinances are not at all healthy.

Our National Pest Control Association cannot reemphasize strongly enough that an ounce of prevention is better than many pounds thus saved of legislative contention. It is a solemn fact that never before has our profession been so completely bewildered by the proposed legislation, much of which is in the making, and not at all pleasant to contemplate.

Within a few weeks termite service will be in full swing. There will be a migration of termite-operators, so called, who will be wandering about, here today, gone tomorrow, doing the industry no good—doing it much harm. Many such operators are like driftwood, getting nowhere themselves, impeding the progress of legitimate operators. Taking these serious problems into consideration, it is no wonder that some type of legislation is desirable.

The foresight of a prophet is not required, for one to realize the outcome unless there is a right-about-face on the part of all PCO's to be cautious in rendering safe and efficient service to the public, by strictly abiding by the standards and rules established by the National Pest Control Association for the protection and benefit of the industry.

Let the industry become more constructive in its thinking, more cautious, more serious, more conscious of its profession and its service to the public; before the public as well as the public officials become more serious and conscientious in enacting laws that will not be to our liking.

Search For New Insecticides Continues

NEW DEVELOPMENTS resulting from research in the field of entomology promise far-reaching effects upon the general control of insect pests in the future", says Dr. P. N. Annand, chief of the Bureau of Entomology and Plant Quarantine, in his annual report. These developments, he says, probably will effect large-scale programs to combat outbreaks of injurious insects and should, although perhaps in a less direct way, influence quarantine activities. Many of these new developments will be of use in combating insect pests on the farm and in the home.

DDT still holds the spotlight in the insecticide field. Present results indicate that DDT will assume an important role in the control of many common household insects. . . . Over 1600 different compounds were synthesized as insecticides and some proved to be definitely toxic to insects. Among the material tested was the gamma isomer of benzene hexachloride which was found to be more toxic to some insects than DDT.

A Guide For National Advertisers Selling Household Insecticides Containing DDT

1. Identify the type of product offered, i.e., spray, aerosol, powder or paint.
2. State whether the product is effective only against designated insects present at the time of application or whether it has lethal power for a period of time against designated insects crawling or resting on surfaces treated with it.
3. Disclose the percentage of DDT present.
4. Disclose percentage of any "knockdown" materials present.
5. List on the label the insects killed by the product offered and refer to those insects only, in advertising.
6. Restrict performance claims to the specific product offered.
7. Avoid misleading reference to ingredients in product names and in advertising and labeling claims.
8. Give adequate directions for use in labeling and in accompanying literature.
9. Refer to "cautions" required for safe use or in lieu thereof include a statement such as "Use carefully as Directed."
10. Submit labels to the Insecticide division of the U. S. Department of Agriculture for preview and advice; discuss doubtful advertising claims with the National Better Business Bureau."

—From a Bulletin issued on December 10, 1945, by the National Better Business Bureau, Inc., 405 Lexington Ave., N. Y.

Insecticide Solvents for DDT[1]

By **W. E. McCAULEY**

THE PROBLEM of finding an ideal solvent for DDT has been occupying the attention of persons interested in insect toxicology ever since the amazing properties of this widely publicized insecticide became known. The insecticidal activity of DDT is greatly enhanced and its toxic effect is more rapid and spectacular when it is in **solution.**

By definition **solution** is the act or process by which a substance (solid, liquid, or gas) is mixed homogeneously with a liquid (called the solvent); or **solution** may mean the homogeneous mixture (typically liquid) formed by the above process. In true solutions the molecules of the dissolved substance (called the solute) are dispersed among those of the solvent. Maximum chemical activity usually results if a substance is thus dispersed molecularly.

Chemical insect toxicants are placed in solution for many reasons; the most important of these is to effect a molecular dispersion of the toxicant which provides maximum deadly efficiency when applied against the insect organism. This phenomenon is more easily explained by pointing out that before any chemical can react with a biological organism, such as an insect, or with animal tissue, the chemical must first pass into solution in a portion of the body fluid. It follows logically that a chemical already in a solvent of a suitable nature will accomplish intimate contact and subsequent penetration of the body wall more readily than a similar chemical in crystalline or other solid form. Not only does the solution act more rapidly, but it is more efficient; consequently, less chemical is needed to effect control of a given insect.

Since the development of DDT there has been much work done to discover suitable solvents. The chief interest of the insecticide manufacturer or the Pest Control Operator is in the preparation of oil base sprays stable at low temperatures, or the preparation of water miscible concentrates with high DDT content. The most comprehensive articles on solvents for DDT, to date, have been prepared by Jones, Fluno, and McCullough[2] of the Orlando Laboratory of the U. S. Department of Agriculture and Fleck and Haller[3] of the Beltsville Laboratory of the U. S. Department of Agriculture.

Usable solvents for insecticides should have the following characteristics: high solvency for DDT, pyrethrum, and derris resins; high flash point (above 125°F.); unobjectionable odor; compatibility with DDT and other insecticides; no discoloration resulting from use; availability in quantity; non-toxicity to warm-blooded animals; moderate cost; no corrosion of metals, and insolubility in water. All the desirable characteristics of a usable solvent for DDT have been found to exist in Velsicol AR-50 which has made an impressive showing in the solubility table drawn up by Jones, Fluno, and McCullough.[4]

Velsicol AR-50 and the other Velsicols, AR-60, and AR-70, are trade names for certain methylated naphthalene solutions containing a minimum of 70% of various methylated naphthalenes and a maximum of 30% of other aromatic and non-aromatic hydrocarbons.[5] In addition to their own excellent insecticidal properties, these products are exceptionally good solvents for DDT, as the following table shows:

Table I. Precentage of DDT By Weight in Finished Solutions Using Velsicol Solvents

Velsicols	Room Temperature	23°
AR-50	38-40%	30-42%
AR-60	38-40%	30-33%
AR-70[6]	40%	30%

Deodorized kerosene, used extensively in household insecticidal sprays, is a very poor solvent for DDT; the solubility of DDT in deodorized kerosene is less than 5 gr. per 100 ml. When Velsicol AR-50, however, is used in a combination of 80% deodorized kerosene, 5% DDT, and 15% Velsicol AR-50 (all by weight), the resulting solution is an excellent product that is remarkable effective and inexpensive, and which remains stable at —20°F. The components of this product are available in quantity.

The combination of Velsicol AR-50, DDT, and deodorized kerosene is not a new insecticide formulation. It has been widely used by the armed forces in fighting the war against insects and disease. Despite its remarkable toxicity to insects, Velsicol AR-50 appears to possess a low order of toxicity toward man and warm-blooded animals.

Because of the confusing and conflicting statements that are prevalent concerning the solvents available for DDT, these few simple tests are outlined to help in the evaluation of solvents:

1. The determination of the speed of solution can be ascertained in this manner:
   a. Use a uniform sample of DDT; different batches and different grades of DDT vary in solubility, depending upon the isomer content, crystalline structure, and purity.
   b. Test solvents at uniform temperature; solvent efficiency varies markedly with change of temperature.
   c. Compute the percentage of solvency. (Inasmuch as DDT is sold on a weight basis and solvents are sold on a volume basis, solvent power is usually tested on the basis of weight of solute per volume of solvent; for example, solvent power is expressed in Jones' table[7] as pounds of DDT soluble in a gallon of solvent. It should be kept in mind, however, that the solvent power expressed in this way is quite different from the other commonly employed expression "percentage solubility" which is the ratio (expressed in per cent) of the weight of the solute to the weight of solution. For example, on Table I of this paper the solubility of DDT in Velsicol AR-50 at room temperature is given at 38-40% by weight. If this solubility were expressed on the weight-volume basis, the figures would read: approximately 65 gr. of DDT soluble at room temperature per 100 ml. of solvent.)
   d. Use an equal amount of agitation or stirring for each solvent under test.
   e. Judge the end point or time of complete solution by the disappearance of all solids or cloud from the mixture.
2. Retention of DDT (solute) in solvents under test should be determined somewhat as follows:
   a. Determine the temperature at which the solution may be held for long periods without depositing DDT crystals.
   b. Time the procedure carefully because precipitation may not occur rapidly.
   c. Determine whether the solution will continue to be clear for long periods of time after being seeded, that is, after a small crystal of DDT is added to the solution. (This critical test is necessary if permanent stability is desired because supersaturated solutions may remain stable for some time when they have not been seeded, but seeding will cause the deposition of the excess solute once precipitation is started.)
   d. Note the amount and type of crystallization that occurs.
   e. Determine the degree of re-solution which results when the solution and precipitate are returned to room temperature. This is most important. (The tendency of crystals on the bottom of the container to form into layers usually means complete re-solution will not result without considerable agitation, whereas suspended crystals usually redissolve readily when the mixture returns to room temperature.)
3. The retention of DDT in mixtures of solvents may be determined as outlined above.
4. Where water miscible concentrates are being prepared, several special considerations are important:
   a. The solvent must be insoluble in water.
   b. The solvent must be readily emulsifiable in water. (Many solvents which contain aliphatic petroleum oils are less readily emulsified than are the aromatic petroleum solvents.)
   c. The amount of emulsifier or cost of emulsifying the various solutions under test should be considered, as some solvents emulsify more readily than others.

If the foregoing tests are carried through and the suggested precautions observed, there will be little possibility of choosing an inferior solvent for DDT. It will become apparent also to the investigator who has conducted these tests that the methylated naphthalenes are the most nearly ideal DDT solvents currently available.

[1] Summary of remarks made by W. E. McCauley on January 28, 1946 at the Pest Control Operators Conference, Purdue University.

[2] Jones, Howard A., Fluno, Helen J., and McCullough, George T. "Solvents for DDT". **Soap and Sanitary Chemicals.** Vol. XXI, No. 11: 110-116. Nov., 1945.

[3] Fleck, Elmer E., and Haller, H. L. "Solubility of DDT in Kerosene". **Industrial and Engineering Chemistry,** Vol. 38, No. 2: 177-179. Feb., 1946.

[4] **Ibid.,** p. 112.

[5] U. S. Patent No. 2,347,265, issued April 25, 1944, and assigned to Velsicol Corporation, covers insecticidal preparations containing methylated naphthalenes.

[6] Velsicol AR-70 is being used extensively in aerosol bombs.

[7] Jones, Howard A., Fluno, Helen J., and McCullough, George T., **op. cit.,** pp. 110-114.

Sixth Southern Pest Control Operators' Conference
Louisiana State University, Baton Rouge, La.
FEBRUARY 14, 15, 16, 1946

THE SIXTH CONFERENCE opened its first morning session with the largest number of PCO's registered, of any of the preceding conferences. The total number of PCO's and faculty registered was 132, and this registration represented 12 states, the largest number coming from Texas. All enjoyed the "best ever" conference and the three days of delightful weather with the serving of southern dripped coffee during the intermissions of both morning and afternoon sessions. Dr. O. W. Rosewall was chairman of the conference, assisted by Mr. L. S. Bridges, Secretary and Treasurer. The latter was a very busy executive throughout the conference.

At 10:00 A.M. of the morning of February 14, 1946 the Sixth Conference was called to order by Dr. O. W. Rosewall, who presided during the morning session. The PCO's were welcomed by Dean Fred C. Frey, Dean of Administration of Louisiana State University, and Hon. Harry D. Wilson, Commissioner, Department of Agriculture and Immigration of Louisiana, who is also Chairman, Louisiana Pest Control Commission. The response was given by Mr. Theodore Oser, President, National Pest Control Association, who gave an impressive, thought-provoking discussion. Then followed a report given by Wm. O. Buettner which covered many phases of the problems confronting the PCO today and gave suggestions for the better business methods of tomorrow. Dr. L. B. Lucky, Director of the Bureau of Veterans' Education at Louisiana State University, discussed the employment of War Veterans in the Pest Control industry.

The afternoon session began at 1:30 P.M. and was presided over by Associate Professor George H. Lowery, Jr. The first discussion was by Dr. Wm. H. Gates on "Biology of Rats and Mice"; during discussion he introduced many interesting facts in regard to "hamsters", rat-like rodents which have been introduced into this country for experimental purposes. Next Mr. John Hogan reviewed the "Status of the Rat Population in the New Orleans Area". Much interest was expressed by PCO's in the audience in regard to the various species of rats and how they were distinguished.

The following four subjects: Application and Use of "1080" by Lt. Glen C. Prock, "Rat Control in State of Louisiana" by G. T. Grant, "Typhus Fever Research in Texas" by M. C. Wukasch and N. M. Randolph, "Comments on "1080" by Wm. O. Buettner, covered the uses of "1080" in a detailed manner. Further discussion from the floor was climaxed by the urgent plea by Mr. Buettner for the careful use of this deadly poison.

During the afternoon recess group pictures were taken of the PCO's in attendance.

At 7:30 P.M. a banquet was held in the dining hall of the State Capitol, at which the Hon. Harry D. Wilson was Toastmaster; he was ably supported by W. B. Hill. Wm. O. Buettner was the principal speaker of the evening. Everyone missed the congenial spirit of W. E. Anderson, State Entomologist, who made all arrangements for the banquet, but was unable to attend due to illness.

The second day's program began at 9:00 A.M., and the morning session was presided over by H. O. Abel, President of the Texas PCO's Association. The subjects presented were: "Mouth Parts of Arthropod Pests" by Associate Professor J. Harvey Roberts, "Cockroaches" by I. J. Becnel, of Experiment Station, "DDT and Its Uses" by C. E. Smith, Entomologist of Experiment Station, "Practical Experiences with DDT" by T. D. Dutsch of Experiment Station and "Status of DDT Today" by Wm. O. Buettner. Much interest was shown in regard to the latest results of experiments for the control of pests with DDT.

The afternoon session on the topic of Fumigation was presided over by Wm. O. Buettner. The speakers were B. C. Culver on "General Problems of Fumigating", M. F. Canle on "Apparatus Used in Fumigating", L. Kotler on "Problems of the PCO in Fumigating Buildings" and J. Mandlebaum on "Comments on Fumigation". Following the above discussions, the presiding officer gave some very important advice to men who carry on fumigating work.

Upon completion of the scheduled afternoon program, it was decided to continue with the evening program so that those who wished to attend the "Rodeo" at the Agricultural Center at 7:30 could do so. Thereupon H. O. Abel gave a very interesting talk on the "Value of State PCO's Associations to the Industry".

At 5:00 P.M. there was a meeting called for all PCO's of Louisiana to attend for the purpose of organizing a State Association. At this meeting the temporary officers, L. S. Bridges, President, and N. T. Aguillard, Secretary-Treasurer, were elected to serve until the permanent organization was formed.

The third morning session, the final session, began at 9:30 A.M. and was presided over by J. H. Roberts. The "General Discussion of Termites" was led by W. B. Hill; the report of the "Termite Committee" was reviewed by J. L. Howell. The next two discussions were based on the important ant pest of the South, the Argentine Ant. The first was the "Biology of the Argentine Ant" by T. C. Barber; the second, the "Planning an Argentine Ant Control Campaign" by E. R. Barber.

Sixth Southern PCO's Conference closed at 12:00 noon.

DDT and Bedbugs in Chicken Houses

Summary.—5 per cent DDT dissolved in kerosene has proved an excellent control for bedbugs in chicken houses. In three houses the back and side walls, roost, wooden nest boxes, with nesting material cleaned out previous to treatment, and the exposed portions of feed boxes were treated. In the fourth house, the nesting material contained in wire bottom nesting boxes was not removed before treatment. Two months after treatment no live adult or nymphal bedbugs have been found in any of the treated houses.—7-14-45.

Walter M. Kulash and J. Myron Maxwell—Jour. Econ. Ent., October, 1945, Vol. 38, No. 5.

HERE'S A HARD-TO-BEAT OFFER FOR EXTERMINATORS!

You can apply long-term residual fly control in your service work at only 20c PER GAL.

IF YOU USE
OUR POTENT AND HIGHLY CONCENTRATED

TAT SOLUTION Containing 35% DDT

All types of dusts and powders available:

3%-5%-10% DDT DUSTS · 25% and 50% WETTABLE POWDERS

Important News

FORMULA 83

(CONTAINS "ANTU")

— the sensational new Norway Rat Specific, most potent rodenticide on the market. Contains ready-to-use feeding baits and drinking baits.

FREE!

Send for comprehensive Data Manual on Insect Control, listing rates of application and dilutions suggested. Also list of TAT products and prevailing price schedules.

O. E. LINCK CO. INC. MONTCLAIR, N. J.

GOOD HOUSEKEEPING in Food and Drug Establishments

By CYRIL C. SULLIVAN, *U. S. Food & Drug Administration, Boston, Mass.*

Editor's Note: The following paper was read by Dr. Sullivan at The Eastern PCO Conference, Massachusetts State College, February 5, 1946.

IT HAS ALWAYS been a pleasure to discuss applicable provisions of the Federal Food, Drug and Cosmetic Law with any group sincerely interested in promoting cleanliness in the preparation and handling of food and drug products.

I have examined the program for your several days' meeting here at Amherst; I am familiar with the type of meetings that members of your Association have had at Purdue University and other sectional meetings. I am impressed with the character of the program, obviously designed to improve the technique of vermin control and thus to enable each and every one of you and your employees to render a more effective service to those manufacturers who avail themselves of your special skills in this field.

This program exemplifies an effort on your part to do your job better, to be more proficient in your work, and for this effort you are to be congratulated and encouraged.

With the passage of the Federal Food, Drug and Cosmetic law by the 75th Congress in June of 1938, the Food and Drug Administration was charged with the responsibility of enforcing the provisions thereof. Of particular interest to this group are those sections of the law having to do with cleanliness or good housekeeping in the handling of food and drug products. A portion of Section 402, in referring to adulteration of foods, states in part that a food shall be deemed to be adulterated if it consists in whole or in part of any filthy, putrid or decomposed substance, or if it is otherwise unfit for food; and further, and equally important, a food shall be deemed to be adulterated if it has been prepared, packed, or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health. This Section of the law imposes upon the Food and Drug Administration an obligation to rid the channels of interstate commerce of foods contaminated with filth of any character. Other sections of the law direct the enforcing agency to use certain means of enforcement procedure, such as Section 704 authorizing Food and Drug Inspectors to enter, at reasonable times, any factory, warehouse or establishment in which food, drugs, devices, or cosmetics are manufactured, processed, packed, or held, for introduction or after introduction in interstate commerce.

The law places complete responsibility on the firm or individual who offers to or places adulterated shipments of food, drug or cosmetic products in the channels of interstate commerce. It is therefore apparent that in those cases where manufacturers employ pest control firms to eliminate conditions which may contaminate food products, such pest control firms have a very definite moral obligation to the food manufacturer or processor.

It is a regrettable fact that as yet the manufacture and handling of foods in the United States is frequently carried on under conditions which are likely to contribute filth to foods. This condition is reflected in Court actions charging violation of the Food, Drug and Cosmetic Act which increased 45% during the fiscal year 1945 as compared with the preceding year.

Over 71% of food products seized involved charges of filth and decomposition or a total of 1,735 actions during the last fiscal year. The Food and Drug Administration has intensified its efforts to prevent the inexcusable loss of food through filth and decomposition.

There appears to have been a breakdown in normal sanitary controls in food manufacturing plants, and especially in warehouses. This, I believe to be a most serious feature of the domestic food supply. The American food industry, as a whole, has taken the position that the consumer is entitled to pure, wholesome, clean and uncontaminated food. I regret to say, however, that there is a fringe of careless or indifferent manufacturers who pull down the high average of the industry as a whole, therefore a large amount of regulatory work must of necessity be devoted to filth and decomposition.

That the attitude of the Courts is becoming more severe towards contaminated foods is shown by the fact that during the 1945 fiscal year, 27 of the 44 criminal prosecutions in which fines of $1,000, or more, were imposed, were based on shipments of unfit foods. Likewise, 24 of the 35 injunctions requested of the Courts involved insanitary conditions in food factories or storage places, the shipment of filthy foods, or both.

In the regulatory work of the Food and Drug Administration, a long-range program is in effect to prevent terminal infestation of foods in storage where inadequate protection is provided from the ravages of rodents and insects.

To store food that reaches its destination in a sound condition on premises where it will ultimately be wasted by carelessness in maintaining suitable sanitary conditions, is indeed very poor business.

Cereal products, including baked goods, were involved in the largest number of food products seized recently. Other products conspicuous in the seizure record were: dairy products manufactured from milk and cream that had become contaminated on the producing farms; candy made from unfit materials or in insanitary factories were also involved in a large number of seizures, next in the number of seizures were fruit and vegetable products prepared from wormy or decomposed raw stock; there was also a large number of seizures involving insect-contaminated spices and nuts stored in insect infested warehouse. It has been stated that of all the damnable charges which may be brought against a firm, the one which results in the most unfavorable publicity is "contaminated with filth".

I trust that the above remarks concerning the activities of the Food and Drug Administration will impress you with the importance of adequate pest control in factories manufacturing food products and in warehouses where such food products are stored.

The pest control officer and the Food and Drug Inspector have at least one thing in common concerning food factories and warehouses where food products are stored, that is, the detection of the presence of rodents and insects, and the routes of contamination to food and drug products prepared in such factories or stored in such warehouses. At this point the paths of the pest control officer and the Food and Drug Inspector branch off. The pest control officer is now concerned with the elimination of such insects and rodents that infest factories and warehouses, while the Food and Drug Inspector concerns himself with measures to prevent contaminated food products from getting into channels of interstate commerce and thus to the consuming public.

Since the detection of filth and contamination in food plants is a subject of mutual interest this afternoon, for the purposes of this discussion I present the following classification of avenues for the introduction of filth and contamination into food plants.

1. Filth and other contaminants may be introduced on the hands, clothing and feet of employees, especially food handlers.
2. Filth and contamination introduced by rats and mice.
3. Filth and contaminants introduced by animals and children allowed access to plants.
4. Filth introduced by flies.
5. Filth introduced by water supplies or from contact of utensils or equipment, with adjacent polluted streams or bays.
6. Filth introduced by cockroaches.
7. Filth introduced with dust from the streets.
8. Filth introduced by parasites or other contaminants in the raw materials used in the food plants.

In considering the possible contribution of filth to food by food handlers, the usual form of such contamination is by contact with the food manufactured in the plant. In addition, the food handler may bring germs of communicable disease which are present in the nose, mouth, throat, urinary and gastro-intestinal tracts and which leave the body with the excretions of these parts, or he may bring filth into plants as pus of sores and the like. In this way, disease germs which are associated with filth, may be spread either directly or indirectly. A number of diseases may be spread by the contamination of food by food handlers, besides

PRENTISS

PRENTISS PRODUCTS for PEST CONTROL

Available now

PRENTISS 30% DDT CONCENTRATE

a Concentrated liquid Insecticide containing 30% Technical DDT by weight.

PRENTISS No. 10 CONCENTRATE

a 50% solution of Dichloro-Diphenyl-Trichoroethane isomers in a special solvent for production of residual sprays for bedbug, fly and mosquito control

Also

Pyrethrum Concentrates
Pyrethrum Powders
Rotenone Products
Fortified Red Squill Powder and Liquid
DDT Concentrates

INSECTICIDES

R. J. PRENTISS & CO.

110 WILLIAM STREET, NEW YORK 7, N. Y. .... 9 SO. CLINTON ST., CHICAGO 6, ILL.

the ever-present danger of botulism, and the more common form of so-called food poisoning, sometimes incorrectly called, ptomaine poisoning. Perhaps of all the elements to achieve food free of health the most important is the element of human behavior. Healthy human beings, clean hands, clean clothing and clean habits, are essential to prevent the contribution of filth to food in its preparation.

Of all of the sources which may contribute filth to food, next to food handlers, the rat is the most likely and perhaps the most dangerous. In certain sections of the country, rat infestation of food plants not only is very prevalent, but the rat population in some such plants is tremendous. They play an extremely important role in the spread and dissemination of disease. They are not only mechanical carriers of bacteria and parasites, but in addition, a number of their own diseases are transmissible to man. The type of food poisoning sometimes incorrectly called ptomaine poisoning, is usually caused by infection with organisms of salmonella group. These are of animal origin and are frequently found in rats which transmit them to human food by means of their excreta. The salmonella bacteria grow rapidly in most foods, particularly meats, with no apparent change in the appearance of the food, and thus food poisoning is conveyed to man. Contamination of human food by rats can well be expected when rats have free access to foods and food products in food manufacturing and food handling plants. We have frequently found that the contamination of foods by rats, and the same thing applies to mice, is not theoretical, but very real, which is amply demonstrated by the fact that very recent experiences have shown literally thousands of instances of the occurrence of well defined rodent fecal pellets in large number of kinds of food. If we find this physical evidence so often, it is not to be denied that more frequently foods contaminated by rats escape detection, for when the physical evidences of this contamination are not present, products may still have been so contaminated, and the physical evidences may not be apparent. Chemical and physical methods have been perfected by the Food and Drug Administration which permit of the identification of rodents and insect contamination and bacteriological methods have been perfected permitting the identification of the causative organism in food-borne infections.

In the interest of public welfare, I recommend that the pest control officer insist, insofar as he is able, that establishments which employ his services be made rat and rodent proof.

We frequently find pet cats, stray dogs, or very young children in food manufacturing plants. These agencies are a constant potential source of contamination and should be strictly barred from all plants handling food products.

The common housefly is probably the most widely distributed insect to be found anywhere in this country. The fly lays its eggs in filth or in decomposing protein materials. It does so, so that the larva or maggot, will have food on which to develop. Favored breeding places are manure piles and decomposing protein materials. It may lay its eggs in dead animals, or in fermenting vegetable materials. The habit of the adult fly is to feed and rest on all kinds of filth. Therefore, it can be readily seen that its contact with food must inevitably bring filth and dangerous bacteria to food. We have actually observed the fly feed on human or animal excreta and then alight on human food. The fly will gorge himself on the contents of a spittoon, mayhaps containing the sputum of a tubercular patient, or the pus of a discharging sinus, and then within a few moments alight on a cream puff in the course of manufacture in a bakery.

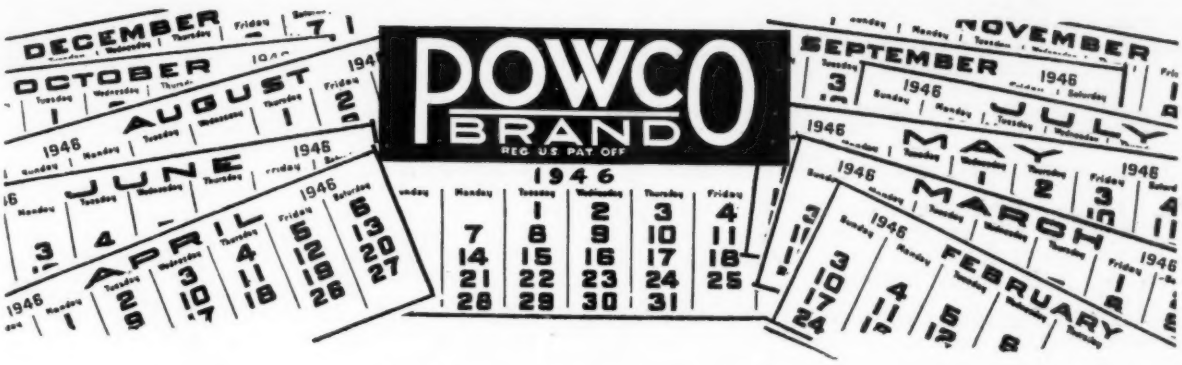
The hairy legs and body of the fly are perfectly adapted to carrying filth and germs, but a peculiar trait of the fly, that is the disgusting habit of regurgitation is equally dangerous. When feeding, the fly draws up liquid through its proboscis, or liquefies solid food by depositing a sort of saliva on the food in order to dissolve it and then draws it up as a liquid.

The fly menace as a contributor of filth and disease germs to food is very significant. The only answer to the fly problem is that the fly must be kept entirely out of food factories. It is not sufficient that food-handling plants and warehouses be so screened as to prevent the entrance of flies, but the fly-breeding places should be diligently sought out and destroyed. There is one redeeming feature in the fly's habits from the control standpoint, and that is, its range of flight seldom exceeds 700 yards from the place of its birth. Therefore, if the fly is not carried away by the wind or in an automobile or otherwise, its range normally will only be within 700 yards of the place of its birth. This means that when we have an abundance of flies in a plant we may expect to find their breeding place within this distance therefrom. It is therefore possible to search out the breeding places and destroy them. Usually these will be a stable, pig-pen, an outhouse, a garbage dump, or some such place of filth. Filth introduced into food plants by the reason of polluted water, is not very significant in the interior of the New England States. The purity of tap water used in plants is and should be controlled by Public Health officials. In Boston and other waterfront cities throughout New England, there is always the potential danger of contamination by use of polluted harbor water. This applies particularly in the fish and shellfish industries. In your capacity as pest control officials I know that you are more familiar with the nocturnal habits of cockroaches than I am. I realize there are some five species of cockroaches known to inhabit restaurants, ships, and food manufacturing plants. They usually hide during the day in darkened sheltered places where they collect in large masses. Such hiding places are usually cracks and crevices in walls and floors, around sinks and water lines, and other damp locations. Roaches, while feeding, deposit an ink-like fluid from the mouth. They leave pellets of excreta on food and surfaces over which they run. The literature on the cockroach as a disease carrier is not as extensive as that of flies, but recorded experiments show that roaches feed upon material bearing infection, and carry the organisms so ingested without lessening their virulence. This has been definitely proven in the case of streptococci and staphylococci. An important factor in the distribution of filth and disease organisms by cockroaches is that they transmit such products mechanically on their hairy legs and bodies to the foods on which they crawl when they emerge at night; they are potentially dangerous and should be entirely eliminated from food and drug manufacturing establishments.

The contribution of filth to food by dust of the streets is significant. Filth abides in this dust contributed thereto by birds, animals and human being. If food plants are so located as to be subject to the introduction of dust by wind from streets, or surroundings, this is a potential source of pollution of foods. In one case reported in the literature where extensive food poisoning resulted from contamination of Boston cream pies, exhaustive examinations were made of cultures taken at various places in the plant. The organism B, Cloacae, was isolated on the floor of the ice box, on the floor of the cooking room near the cooking kettle, and from the sill of one of the ventilators. The finding of this organism was significant, in that it formed a natural chain of circumstances. Dirt from the ventilating windows, which would fall into the room, would land on the wet floor. The cans into which the custard was poured from the kettles rested on this wet floor, and dirt present would adhere to the bottoms of the cans and be transferred to the ice box. These cans contained about 40 pounds of custard; and to empty them, it was necessary to place one hand on the bottom of the can, since the can had no handles, thus transferring any dirt and any bacteria from the bottom of the can to the lifter's hands. After emptying, one hand was then free to scrap out the can's content, and thus introduce the dirt wiped off the bottom of the can into the mixture. It was found that the employee did just that. Having found B. Cloacae in the cream puffs, it was then possible to say that that particular contaminated product which itself showed B. Cloacae, B. Aerogenes and B. Coli, derived its contamination originally from dust.

The condition of raw materials brought into food plants is very important. Many such raw materials may have been subject to contamination in warehouses and may contain therein nests of rodents. They may be insect infested and this may be a source of contamination to an otherwise clean plant. It is therefore very important that any food or drug manufacturing plant have a specially constructed receiving platform, or better still, a receiving room where all such raw materials can be adequately inspected and examined and if necessary fumigated before being taken into the plant proper. In such a receiving room facilities should also be provided for the separation or salvaging of raw materials that may be partially infested, or partially unfit for food. We find this condition many times in bagged materials such as cereal products, flour, and such items, whereby only the bags stacked on the outside of a pile in a warehouse may have become contaminated, and the bags in the center of the pile are free of such contamination. Under such circumstances salvage is not only possible but is recommended.

In conclusion let me say that the conditions which I have described herein as potential sources of contamination in food and drug products are evidences of poor housekeeping in a food manufacturing establishment. The Food and Drug Inspector engaged in sanitary inspections of food and drug factories uses no secret processes, but through training and experience has developed a technique to determine conditions which may contaminate food and drug products manufactured in such factories. You will find him in food factories with a flash light, photographic equipment and such other materials as he may need to detect the avenues of contamination to food products. Early in his training the Food Inspector has learned to differentiate between disorder and insanitation. He must, of course, be able to recognize conditions which are really likely to contribute filth to foods, and differentiate these from those apparent messy conditions which have no sanitary significance. This too, the Pest Control Officer must have in mind in order that he may go directly to the source



BASIC 1946 INSECTICIDE MATERIALS

PYRIN—Available in a new, improved form. The extra killing value in PYRIN plus its lower cost enables you to produce odorless, non-irritating household insecticides to meet a critical demand. PYRIN will combine all the advantages of Pyrethrum . . . wide efficiency against household insects at a cost comparable to the synthetics.

D.D.T.—A wide range of Basic Concentrates for dusts and sprays both agricultural and household. Send for samples now!

PYRETHRUM EXTRACT—*Powco Brand* Pyrethrum Extracts of 20% pyrethrins or higher. Our process retains the time-tested advantages of our cold extraction and assures the utmost stability and clarity.

PYRETHRUM POWDERS—Finer milling to give you more particles per pound . . . greater speed with higher kill.

ROTENONE PRODUCTS—Derris, Cube and Timbo powders of the same finer grinding.

STIMTOX—Stimtox "A", the low-cost, fortified Pyrethrum powder for Pest Control Operators and compounders of roach powders.

NH DUST—NH Dust, containing a nitrated hydrocarbon derivative, is an organic insecticide, for crawling insects like roaches, bed bugs, ants and silverfish.

SABADILLA—Concentrate for agricultural dusts and cattle louse powders.

PYRISCENTS—Insecticide perfumes specifically prepared and thoroughly tested for chemical compatibility with the active principle of Pyrethrum and Pyrin. Completely oil soluble. *Pyriscents* (available in almost any odor) *do not react chemically to reduce killing power.*

HYDROSCENTS—For lasting aromatic efficiency, leading perfume manufacturers use these bases because they are really miscible with water. They are specifically designed for use in liquid soaps, theater sprays and other preparations requiring complete water miscibility.

JOHN POWELL & CO., INC.

One Park Avenue, New York 16, N. Y.

of rodent or insect contamination in plants to effect their speedy and immediate elimination.

I regret that I have not had sufficient time to prepare a suitable list of exhibits for this meeting. I will, however, ask Inspector ———— to give you a demonstration of the detection of urine stains on products packed in bags; also a means of detecting insect infestation in flour by the use of the ulra-violet light.

House Approves Insecticide Safety Bill

The House Agriculture Committee on March 21st approved a bill designed to safeguard human beings in the use of insecticides and rodent-killers, according to the N. Y. Herald Tribune.

The bill would permit the Secretary of Agriculture to require distinctive coloring for naturally white poisons. Poison-containing insecticides would be labeled with a skull and crossbones and with the word "poison" in large red letters on a contrasting background.

Manufacturers guilty of mis-branding, false labeling or failure to comply with other provisions of the act would be subject to fines up to $500 for first offenses and fines up to $1,000 or a maximum of one year in prison for subsequent offenses.

The bill would require makers of such poisons to register their products with the Secretary of Agriculture, with copies of labels, claims made for the products and directions for use.

The Secretary of Agriculture could not refuse to register a product, but if he found it did not come up to standards or was ineffective he could register it under protest. This would subject the producer to prosecution for violation of the new act.

'Ferocious Creatures' Jailed; Win Release Upon Investigation

A pair of "terrible creatures," taken into custody by Henrico County Deputy Sheriff Stuart M. Turner, were released today after an investigation showed them not as ferocious as they appeared.

These creatures were found by Mr. Turner at Windsor Farms and he immediately convoyed them to the Henrico jail pending an investigation.

Mr. Turner opened the cigar box in which he had brought the creatures to the jail and showed them to Sheriff T. Wilson Seay, who said, "They might be terrible bugs." Yes, the creatures were male and female, taken from a group of a dozen or more beetle-like bugs, which the deputy sheriff saw clinging to a dead tree.

Willey Describes Animal

County Farm Agent Henry E. Hutcheson, Jr., was summoned in for consultation about the creatures, and when he was unable to identify them, he called Clark R. Willey, associate entomologist with the State Department of Agriculture, and described the specimens over the phone.

The male was equipped with lobster-like pincers extending from his head. From stem to stern he was 2¾ inches long, was 1⅛ inches across and stood almost three-quarters of an inch high.

He was encased in a hard grayish-colored shell dotted with brown spots and equipped with six legs. The female was the same except devoid of pincers.

Rhinocerous-Like Animal

Mr. Willey said they were rhinoceros beetles, so named because of their similarity to the horned animal.

Despite the ferocious appearance they really are rather mild bugs, who use the pincers almost entirely to cut through dead wood. They feed on dead wood and are generally found on lifeless trees.

The entomologist said these beetles were still alive, but were only in a dormant stage through the Winter months. Some half dozen specimens of this type are sent to the State entomologist each year.

—Richmond, Virginia News-Leader.

Which Are You?

Are you an active member, the kind that would be missed,
Or are you just content that your name is on the list?
Do you attend the meetings and mingle with the flock,
Or do you stay at home and criticize and knock?
Do you take an active part to help the work along,
Or are you satisfied to be the kind that "just belong?"
Do you ever go to visit a member who is sick,
Or leave the work to just a few and talk about the "clique?"
There's quite a program scheduled that we're sure you've heard about,
And we'll appreciate it, if you too, will come and help us out.
So come to meetings, often and help with hand and heart,
Don't be just a member, but take an active part.
Think this over, fellow,—you know right from wrong,
Are you an active member, or do you "just belong?"

—PCO News.

—Calendar of Meetings—

Secretaries of Pest Control Associations, as well as others planning meetings of pest control interest, are invited to send date and place of such meetings for listing in this column. To insure maximum publicity in advance of the meeting, such information should be sent at the earliest possible time.

Northern California Pest Control Association, Inc. (quarterly meeting), Sacramento, Calif., in April. W. B. Fortna, Santa Rosa, Calif., is local chairman.

Northern California Pest Control Association, Inc., quarterly meeting, April 27, Hotel Senator, Sacramento, Calif. H. H. Montgomery, Secretary, 1161 Post Street, San Francisco, Calif.

National Sanitary Supply Association (23rd annual convention), May 26-29. Booths for display purposes. Leo. J. Kelly, executive secretary, 139 N. Clark St., Chicago 2, Ill.

National Association of Insecticide & Disinfectant Manufacturers, 32d annual mid-year meeting, French Lick Springs, Ind., June 17, 18 and 19.

Construction Industries Exposition and Home Show, Pan Pacific Auditorium, Los Angeles, Calif., July 12 to 21, 1946. Applications for booths may be made to D. D. Durr, c/o Tabery Corp., 3443 S. Hill Street, Los Angeles 7.

Alabama Pest Control Association, semi-annual meeting, September 14 (tentative), Admiral Semmes Hotel, Mobile, Ala. A. S. Krawcheck, Orkin Exterminating Co., Inc., 101 S. 20 Street, Birmingham 3, Ala.

National Pest Control Association (14th Annual Convention), Roosevelt Hotel, New Orleans, La., October 28, 29, 30, 1946, (Tentative).

American Public Health Association (annual meeting), Cleveland, Ohio, week of November 11, 1946. Exhibits will be featured. Willimina Rayne Walsh, Associate Secretary, 1790 Broadway, New York 19, N. Y.

National Association of Insecticide and Disinfectant Manufacturers, 33rd annual meeting, Hotel Commodore, N. Y., December 2, 3, 4 (tentative).

COLORADO POTATO BEETLE—costs potato growers an estimated $16,500,000 a year*

CODLING MOTH

COLORADO POTATO BEETLE

JAPANESE BEETLE

Baker's DDT

(Dichloro-diphenyl-trichloroethane)

SHOWS PROMISE OF REDUCING THESE LOSSES

During a one-year period, the Colorado potato beetle damaged 22,600,000 bushels of potatoes.

Control of this agricultural pest, through the use of DDT, has been considerably advanced. Recent field and laboratory experiments indicate that DDT is more effective against major potato pests than any other insecticide yet tested.

DDT has also been found effective for the control of two other costly crop pests, the codling moth and the Japanese beetle. However, to be conclusive, tests in the agricultural field should be carried on for several growing seasons. Consequently, only tentative formula recommendations have been made at this time.

Baker's DDT is a fine, crystalline powder and is available in 25, 50, 100 and 200 pound containers. It has a minimum setting point of 89°. Write for prices, stating your requirements. Address J. T. Baker Chemical Company, *Executive Offices,* Phillipsburg, N. J.

FREE DDT BIBLIOGRAPHY — The J. T. Baker Chemical Co. has collated, in brief form, releases regarding DDT from various governmental branches. If you would like a copy, ask for the *free* DDT BIBLIOGRAPHY.

J. T. Baker Chemical Co., *Executive Offices and Plant:* Phillipsburg, N. J. *Branch Offices:* New York, Philadelphia, Boston and Chicago.

**Department of Agriculture—Entomology and Plant Quarantine, 1938. Last figures available.*

Baker's Chemicals

C. P. ANALYZED • FINE • INDUSTRIAL

SOME INSECT PESTS OF THE HOUSEHOLD

By **A. E. MICHELBACHER,** *University of California, Berkeley*

DURING THE PAST few years many new insecticides have made their appearance, some of which are well adapted for the control of household pests. Old standard materials have been perfected or combined with newer chemicals to improve their effectiveness. As a result, the pest control operator is being supplied with an ever increasing number of insecticides that he can successfully use in his business. His main problem is to select the product that will produce the most efficient results when properly applied. Proper application is all important, but the recommendations for use of many insecticides may be so varied as to be confusing. To a certain extent this is the case with DDT. This is well illustrated where this material is recommended as a water suspension spray for the control of flies in structures used to house animals. The amount of actual DDT recommended for such sprays ranges from approximately ¼ of one per cent to 5 per cent. In our investigations we have obtained excellent control with DDT wettable powders where the DDT content per 100 gallons of spray was either 2 or 4 pounds. These dosages expressed as per cent by weight equal approximately ¼ and ½ per cent. To obtain most satisfactory control the entire interior surface of livestock structures should be sprayed. Further, best control results if all the livestock structures in any one locality are treated. Thoroughly applied, such sprays result in the control of flies for about six weeks in the hottest portion of the year and for a period of two months or more during the cooler seasons. In most cases it is believed that the ½ per cent dosage should be used. This is a small amount as compared to those recommendations where DDT content of water suspension sprays is 2½ to 5 per cent. The latter are probably recommended for spot spraying, as contrasted to thorough spraying which is the practice we follow. It is needless to say that the contamination of foodstuff and utensils with a DDT spray should be avoided. Recent investigations by Telford and Guthrie (1945) have shown that the toxic principle of DDT is transmitted through the milk of goats and white rats, when fed food contaminated with DDT. Telford (1945) also found that with goat's milk, the cream was many times more toxic than skim milk, but that the latter contained enough DDT to produce symptoms in white rats. Because of the hazards involved, it is believed that DDT should be used at the lowest possible concentration that will result in satisfactory control. Higher concentrations can be used where spot spraying is done. This type of spraying is necessary where there is a serious danger of contaminating feedstuff or where power equipment for large scale thorough application is not available. The above discussion has only been mentioned to illustrate how widely recommendation for the use of DDT water suspension sprays made from DDT wettable powders vary. No attempt will be made to compare the merits of this type of spray with a dissolved DDT or a DDT emulsion spray. Exceptionally good residual action against flies can be obtained with the latter two, and the form to use is largely dependent upon where it is used and the preference of the pest control operator. Obviously, in homes and similar places a dissolved DDT spray is in general the most suitable.

Successful pest control is based very largely upon experience, and a good knowledge of the habits of the pest to be controlled. These two qualifications plus an effective insecticide result in satisfactory control. Without them it is doubtful if a pest control operator could long maintain a successful business. It is because of the lack of these qualifications that the homeowner and business man must call upon trained and experienced people to handle his pest control problems. The general lack of knowledge of pest control on the part of laymen was well illustrated when DDT was first made available. They thought that it was going to solve their pest problems, and were very much disappointed when this did not occur. In many cases they laid the cause of failure to the DDT, although had the product been properly used, excellent control would have resulted. The lack of experience, not knowing the insect, its habits, or the proper means of application were, however, the principal reasons for failure to obtain control. An insecticide will do little good if it is placed in locations not frequented by the pest. Numerous laymen applied 5 per cent DDT oil based sprays over dark-finished woodwork, windows and other surfaces, and were greatly disappointed to find that the insecticide left an objectionable residue. Such experiences tend to dampen the enthusiasm of the novice, and this is particularly true where they are confronted with complex pest control problems. In many cases it would appear that the efforts of homeowners in pest control should not be encouraged much beyond practicing sanitary measures and the use of fly sprays. The latter might be fortified with a fraction of one per cent of DDT in order to insure a most satisfactory kill when they are used as a space spray.

Much more basic information is needed on the control of a number of our most serious household pests. In some cases control measures are utilized which are not very effective.

It would be very desirable if a research program could be instituted with the purpose in view of separating the effective from the ineffective measures that now occur throughout the published literature. Control measures that are based entirely upon laboratory studies should be segregated from those that have been tested both in the laboratory and under practical conditions and found to be effective. Further, information should be made available on just how and under what conditions a treatment should be applied to give satisfaction. Where there are alternate treatments the merits of each should be accurately appraised and evaluated. In other words, wherever possible, recommendations on control measures, as issued by public service organizations, should be standardized.

Sanitation must still be relied upon as an important means of keeping household pests under control, despite the fact that many new and promising insecticides have recently been developed. Under sanitation, the destruction of natural sources of infestation, should be considered as well as all other accumulations which furnish breeding places for the clothes moths, carpet beetles, cockroaches, silverfish, stored product insects and other household pests.

A year ago I discussed the control of certain household pests before this group. Since this information is published in the May 1945 issue of Pests, my remarks will be confined to additional information or to pests that were not discussed at that time. There is little new concerning the control of clothes moths and carpet beetles. However, mothproofing products under new names are likely to appear due to the release of German patents on such matrials. Those of I. G. Farben industrie dye manufactures known as "Eulans" will certainly be widely utilized. DDT looks very promising against cockroaches. A 10 per cent dust for treating hiding places gives satisfactory control, and the treatment can be supplemented by spraying the under side of table tops, drawers, shelving, etc. with a 5 per cent DDT spray. Another material that has found some favor is a dust that contains approximately 10 per cent of Lethane A 70. This insecticidal dust is said to have as good residual properties as sodium fluoride, and a knockdown comparable to that of pyrethrum.

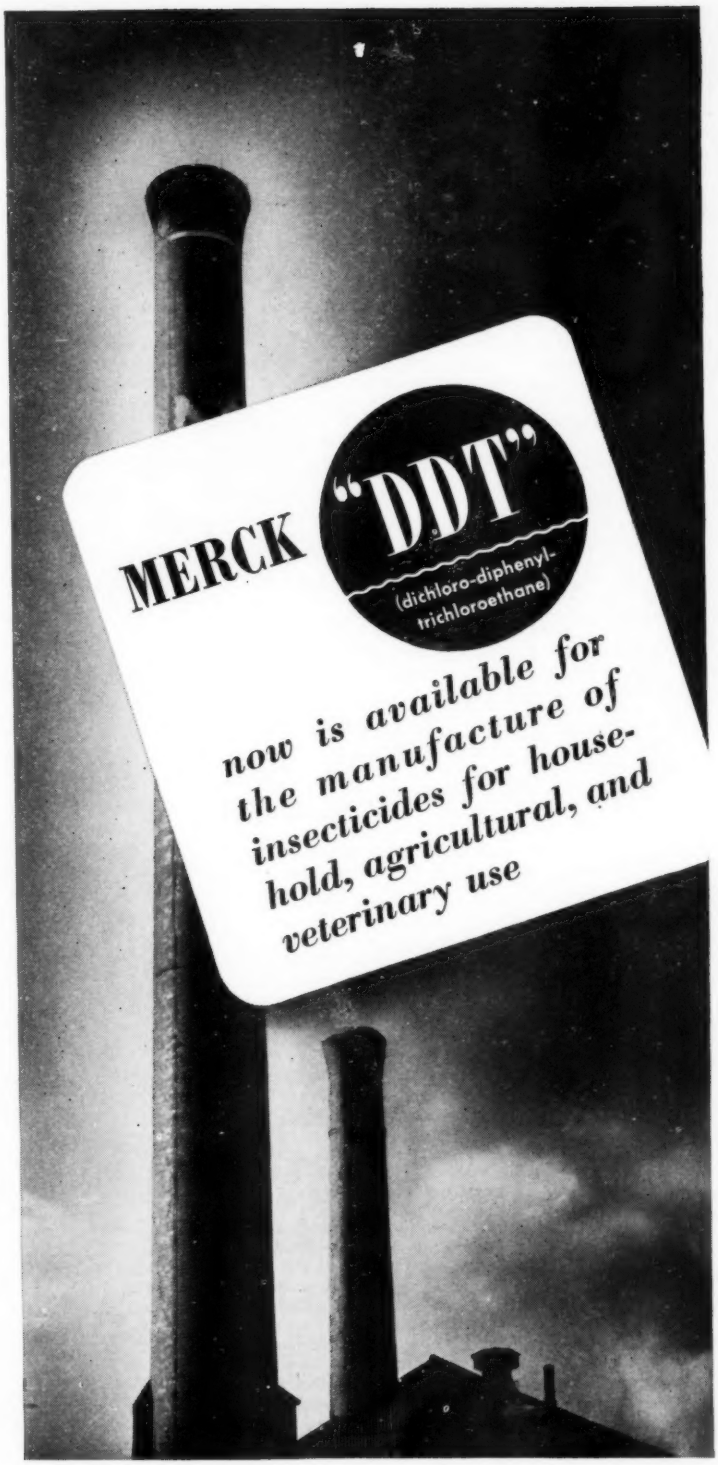
Crickets sometimes are annoying pests. Clothing and fabrics are subject to damage and this is very likely to occur in cases where these materials are soiled. Crickets can be controlled by liberal dusting of floors along the baseboards with pyrethrum, sodium fluosilicate or sodium fluoride. Ten per cent DDT dusts have also been found to be effective. Where there is no danger of contaminating foodstuff, these materials can be blown into cracks and other hiding places. Where extremely abundant, poison baits can be employed. A suitable bait for this purpose is as follows:

Bran	25 pounds
Sodium fluosilicate or sodium fluoride	1 pound
Molasses	2 quarts
Water	2½ gallons

The bait is best applied late in the day in localities where crickets are known to hide. Because the bait is poisonous it should not be placed where there is danger of children or pets eating it.

DDT preparations have been found to be effective in controlling silverfish and firebrats. Berger (1945) has published some interesting information on the food preferences of the firebrat, **Thermobia domestica** Pack. He found that the pest was capable of selecting foods, and that a considerable number were attractive to the insect. Because of the availability and the ease of mixing, he concluded that the most practical food combination for baits was one that contained 85 per cent wheat flour and 15 per cent of powdered sugar.

Wasps sometimes become so annoying that it is necessary to destroy their colonies. In doing this, there is always some chance of getting stung and this is particularly true if the colonies have


MERCK
"DDT"
(dichloro-diphenyl-trichloroethane)
now is available for the manufacture of insecticides for household, agricultural, and veterinary use

NOW that its job of protecting the health of American Service men overseas is almost completed, Merck "DDT" Technical is being released to manufacturers for the production of modern, effective insecticides.

Expanding application defines more definitely the important rôle, present and future, of "DDT" in the hands of the insecticide manufacturer and pest-control operator. For many years, Merck has been producing the pivotal basic chemical employed in the synthesis of "DDT" and thus it was only natural that we should be at the forefront in the production of this powerful insecticidal agent.

The product we are offering is—

"DDT"

(dichloro-diphenyl-trichloroethane)

TECHNICAL

Setting Point 89° C. Minimum

For Manufacturing Purposes Only

As production levels rise and current commitments are provided for, we will find increasing opportunities to cooperate with manufacturers of "DDT" insecticides and to serve as a basic and prime source of supply for this product.

WRITE US FOR PRICES AND LET US KNOW YOUR REQUIREMENTS

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

New York, N. Y. · Philadelphia, Pa. · St. Louis, Mo. · Elkton, Va. · Chicago, Ill. · Los Angeles, Calif.

In Canada: MERCK & CO., Ltd., Montreal · Toronto · Valleyfield

been disturbed. Control is facilitiated if a person is acquainted with some facts concerning their behavior. Wasps belong to several groups and can be distinguished by the type and location of the nests they make. Yellowjackets or hornets build large paper nests which are enclosed in envelopes of several thicknesses. There are two important genera. Those that build their nests above ground belong to the genus **Dolichovespula**, while those that nest in the soil are members of the genus **Vespula**. There are two species of **Dolichovespula** in California, the common hornet, **D. arenaria** and the white-faced hornet, **D. maculata**. The genus **Vespula** is represented by three species in California, the western yellowjacket, **V. pensylvanica**, the common yellowjacket, **V. vulgaris** and the sulfur yellow jacket, **V. sulphurea**.

Three kinds of individuals are found in the nests of yellowjackets, queens, males and workers. The queen is the only individual that over-winters. She does not stay in the nest but selects hibernation quarters under bark or other protected places, where the winter is spent. In the spring the queen starts the nest and rears the first brood, after which the workers take over the rearing, feeding, building and caring for the nest. Once this occurs, the nest rapidly increases in size. Sexual forms are produced during the summer and fall. Males arise from unfertilized eggs and a strong colony may produce as many as several hundred sexual forms. New queens and males are produced earlier in the season in colonies of those species that nest above ground, than in colonies of species that nest in the soil. Once produced, the sexual forms leave the nest, mate, and the new queens seek hibernating quarters. The old queen dies, and the nest begins to decline. Workers left in nests built above ground always die before the advent of cold weather, and usually the nests are deserted by mid-summer. Workers in those species that nest in the soil may live on into the winter. In a single season a strong colony may have produced as many as 25,000 to 30,000 individuals.

Yellowjackets construct their nests from fibers obtained from bark, weather-worn wood, or other plant sources, and fibers from non-natural sources such as paper. The fibers are made into paper by chewing and mixing with saliva. Both liquid and solid foods are utilized. Adults feed only on liquids, and eat principally energy-yielding food, such as nectar, honey dew, juice and pulp of ripe fruit and manufactured sweets. The larvae are fed animal materials such as soft-bodied insects, and meat, which is first chewed up and conditioned by the workers before being given them. Outside of what annoyance they cause, and what fruit they may eat, yellowjackets are beneficial because they destroy enormous numbers of insects.

Control of yellowjackets that nest in the soil is best accomplished by noting entrance to nest during the day. Then at night pour one to several ounces of carbon disulfide into the entrance and cover it with several shovels full of soil. This should result in the elimination of the colony.

Control of yellowjackets that nest above the ground is not so simple. If the nest is merely knocked down, the wasps will immediately rebuild it. For good control it is necessary that the queen and workers be destroyed. A good contact spray can be used for this purpose, and it is best that spraying be done in the evening. The spray should be directed at the entrance to the nest. Any wasps that fly out will be incapacitated so soon as they strike the spray so there is little danger of the operator being stung. The nest readily absorbs the spray and enough material should be applied to thoroughly wet it. Following this, the nest may be taken down. Dove (1945) reported a 10 per cent DDT-pyrophyllite mixture as being effective against wasps where the dust was directed into the entrance holes of the nests. The spray mixture as discussed for fly control in livestock structures also resulted in the elimination of those wasps that built their nest above ground, where the spray was applied by power equipment.

Poison syrup and poison meat baits have been used in the control of yellowjackets. Such materials must be used with a great deal of caution because with syrups there is danger of poisoning honeybees, and with the meat baits, pets.

Polistes wasps are sometimes very annoying but normally do not attack man. They construct paper nests, that are not enclosed in paper envelopes and which seldom measure more than three inches in diameter. Their life history and habits are very similar to those of yellowjackets, except that the colonies are much smaller. The queens are the only members that winter over, and they sometimes become annoying by entering homes to hibernate. The nests are small and open, and the pest is easily controlled by spraying the nest with a good contact insecticide, or dusting with a 10 per cent DDT dust. Control measures are best undertaken after dark.

Mud dauber or thread-waisted wasps are sometimes troublesome but like polistes wasps they seldom attack man. They are solitary wasps and can be distinguished from other wasps by the long petiole attachment between the thorax and abdomen. They construct their nests of mud, and they pass the winter as mature larvae in earthen cells. There is but a single generation a year and mating takes place in the spring. The females construct earthern cells, and the common forms in this region fill them with paralyzed spiders. An egg is deposited in each of them and the cell sealed. No further care is needed, which is in marked contrast to other wasps where the young are fed conditioned food by the workers.

Control is a simple matter since there is only a single individual to contend with. She can be killed with a fly swatter or with a contact spray and the nest destroyed, or the nest can be destroyed when she is seen to leave it. In winter the mud nests should be destroyed to do away with the overwintering forms.

In this discussion only a relatively few of the many household pests have been considered. If time permitted it would have been of interest to have discussed more of the important pests in relation to some of the newer insecticides. Although DDT has been mentioned on numerous occasions, it has not been treated in a thorough manner from the standpoint of the various formulae in which it can be used nor have the merits of these been discussed. Further, little has been said about the hazards involved or was DDT compared with other closely related promising products such as DDD. Much of this information has been considered by other speakers, and the specific information pertaining to the above points can be considered at a later meeting.

LITERATURE CITED

Berger, B. G. 1945. Food preferences of the firebrat. Jour. Econ. Ent. (38(5): 577-582.

Dove, W. E. 1945. Summary of DDT experiments on insects that affect man and animals. U.S.D.A. Agr. Res. Adm. Bureau Ent. Plant Quarantine. E-673: 1-14.

Telford, H. S. 1945. DDT toxicity. Soap 21(12): 161, 163, 167 and 169.

Telford, H. S. and J. E. Guthrie. 1945. Transmission of the toxicity of DDT through the milk of white rats and goats. Science, N. S. 102 (2660): 646.

Income Tax

The ode which follows, inspired by the need for income tax information, was sent to Mrs. Ada Williams, Ada Williams Pest Control, Albuquerque, N. M., by ex-G.I. Wayne Jones, one of the firm's service personnel.—Ed.

The Income tax is nearly due,
The reason why I write to you.
These ugly words I hate to hear,
They jar the soul, the brain, the ear.
Yet Uncle Sam says pay or rue
The day your tax is overdue.
No need to hedge, or fuss, or cry
To beat this gent you've got to die.
I'd rather live and pay my share
Then die and lose all wordly care.
I need your help to gain this end,
So be my pal, my gal, my friend;
And from your books and files derive
The dough I made in forty-five.
I pray my plea will gain your ear
For I can't kill bugs in a prison drear.
Well, perhaps I can with this admission,
I will not get 60% commission.
So you see I'd rather kill bugs in Santa Fe,
Then kill them in Sing Sing without any pay.
If you fail to send me this information
I'll see you soon if I can get probation.
Now I know you're having your troubles too,
Because your tax is also due.
Here's wishing you luck and hoping your mail
Won't have to be changed to the Birmingham Jail.
Let us take comfort in one consolation
That everyone in this great nation
Must pay the piper as the saying goes
Or wear the latest in prison clothes.
Farewell for now, my faithful friend,
Let us fervently hope that in the end
We are not giving each other the razz-ma-tazz
As we kill cooties in Alcatraz.

Notice

We are glad to print personal items of interest. Send us interesting or newsy items about yourself or your family. This magazine is for the Pest Control Industry, and news about YOU is interesting

"OPEN HOUSE" CLOSED OVERNIGHT—
WITH WESTVACO METHYL BROMIDE

You can render food processing plants absolutely vermin free between one work day and the next . . . thanks to Methyl Bromide! Its killing power is matched only by the rapidity with which it ventilates! Thus you save your clients valuable hours and completely end their infestation troubles . . . no matter what pests are in their products or their buildings.

Even in cold storage warehouses, where ordinary methods fail, test after test has conclusively proved that Methyl Bromide, when properly applied, gives an effective kill — without harming food stuffs in the process!

ATTENTION: Industrial Fumigators

Write for complete details about Westvaco Methyl Bromide — its ease of application — its complete speedy action — its adaptability to tarpaulin, box car, vault, warehouse and food processing plants. One of America's outstanding producers of Methyl Bromide, we invite you to use our constructive, on-the-job assistance in applying Methyl Bromide, without cost or obligation.

Westvaco CHEMICALS

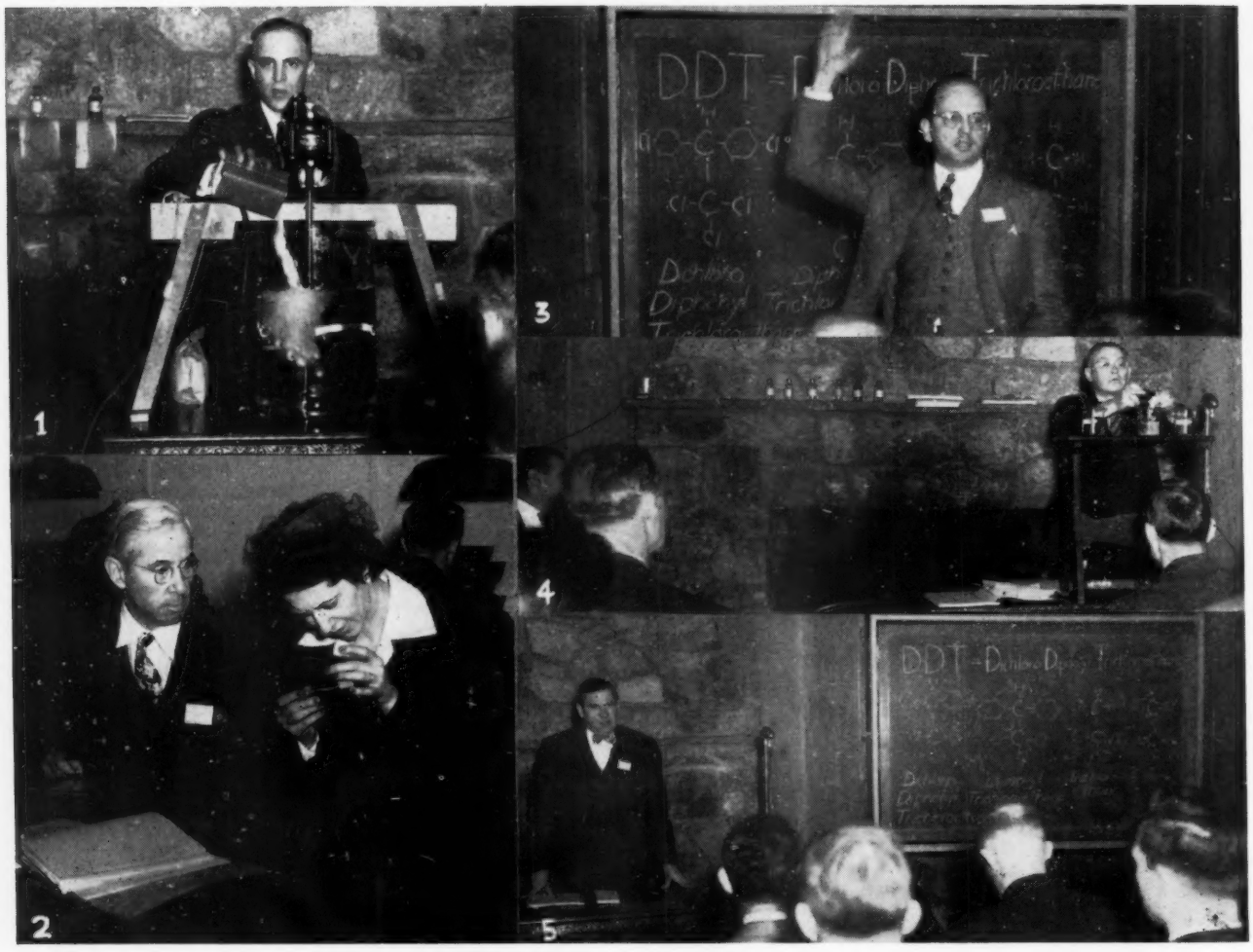
METHYL BROMIDE
FOR EFFECTIVE FUMIGATION

WESTVACO CHLORINE PRODUCTS CORPORATION
405 LEXINGTON AVENUE • NEW YORK 17, N. Y.
CHICAGO, ILL. GREENVILLE, S. C. NEWARK, CALIF.

Manufacturers of: Methyl Bromide • Carbon Bisulphide • Carbon Tetrachloride Ethylene Dibromide • Ethylene Dichloride - Carbon Tetrachloride Mixtures.

Personalities on Parade

Sixth Annual Eastern PCO Conference, Massachutts State College, Amherst, Mass.



1—Phil Mayer demonstrates an Alsop Eng. Co. outboard agitator mixing technical DDT in odorless kerosene in a ten-gallon Pyrex jar, as part of his talk on "Application and Equipment."

2—Mrs. Phil Mayer, an innocent but interested spectator, examines some stored food pests. Looking on is Dr. Harvey W. Sweetman.

3—Carl Peterson, of the E. I. duPont de Nemours Co., predicts, in his talk on "Chemistry of DDT", DDT only first of a new series of synthetic insecticides.

4—Dr. J. L. Horsfall, of the American Cyanamid and Chemical Co., elaborates on "Solvents for DDT."

5—Shown here, of course, is none other than "Bill" Buettner attending to one of his multiple Conference activities: introducing the next speaker during the session on DDT in Bowditch Lodge.

Photos Courtesy Phil Mayer.

DDT Aids Protective Strategy

DDT, the new insecticide, makes more important than ever one field of strategy in man's war against insect pests. This, in turn, calls for new research to develop this strategy that has shot into new importance, say U. S. Department of Agriculture scientists.

The "protective zone" is not new in fighting insects, but has not been used effectively against many pests. One example has been a creosote barrier line to protect corn by preventing the crawling migration of chinch bugs from grain fields. DDT has improved the possibilities for protective zone strategy by creating a new form of contact poisoning.

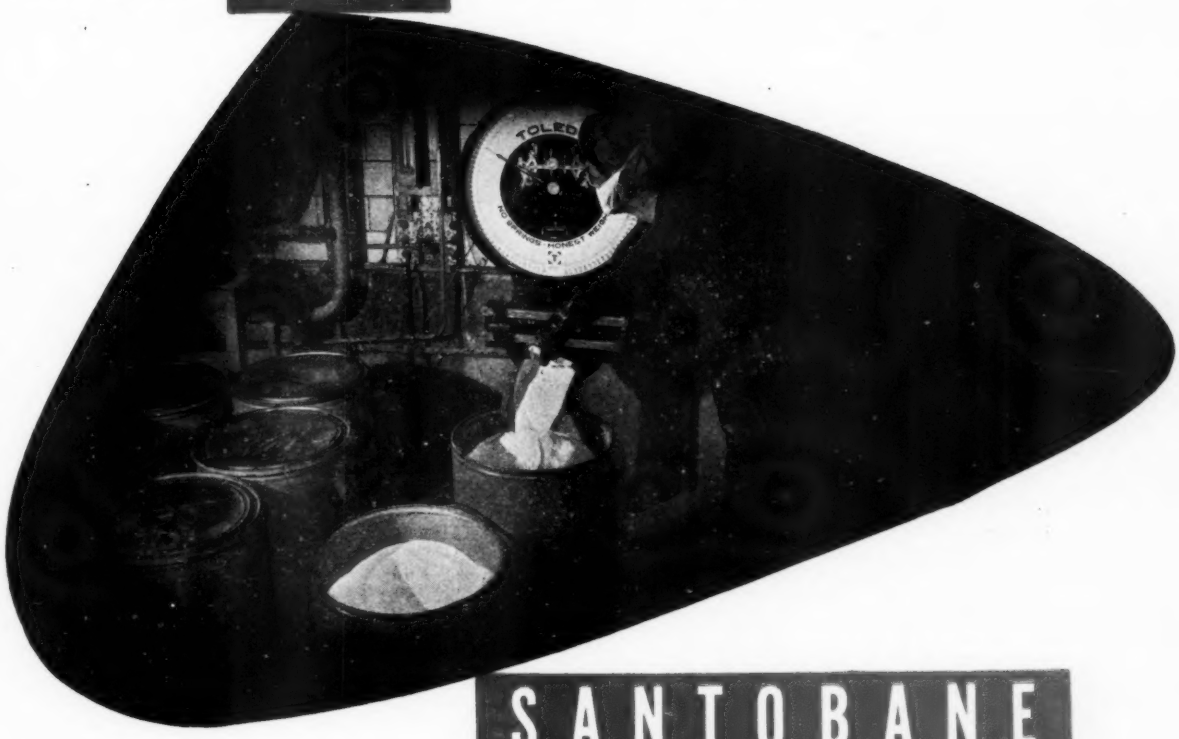
An early application was with bedbugs. Here science takes advantage of the simple fact that, to live, this pest must have an occasional blood meal. The entomologists say spraying bed and mattress with a suitable DDT preparation is all that is necessary, although more general treatment of infested rooms will eliminate the bugs sooner. The pests must come to the sleeper to survive and they cannot reach him without passing over the treated area. By their nature they are driven to their doom.

Spraying screens with DDT is a variation. Mosquitoes and flies that alight on the treated mesh die. But DDT also protects by killing tiny gnats and midges that otherwise make their way safely through unsprayed screening.

Another important use of this "protective zone" strategy is in grain bins. DDT is fine to mix with seed grain for protection against insect injury, but it is poisonous and must not be mixed with grain that is to be used for food or feed. Before the grain is stored, however, it has proved practical to spray an empty bin leaving a long-lasting deposit of DDT in cracks and on the surface. When weevils and other insects that have been lurking in the bin structure move to the newly stored grain they must pass through this deadly protective zone—and DDT kills most kinds before the insects can injure the grain.

Entomologists point out the need for reviewing available information and for research into the lives and habits of the various stages of insect pests. When these facts—known as "life history"—are clear, it is often possible to make effective and economical attack on a pest at its most vulnerable stage, taking advantage of some fact in its habits and way of life. This may call for applying DDT at a stage when the insect can not avoid the effect. But it takes time and patient scientific effort to discover such facts. With new facts revealed by such research, DDT may be expected to become increasingly effective in development of protective zone strategy against the many insects to which this new poison is deadly.

for your DDT formulations



SANTOBANE

(Monsanto's Dichloro-Diphenyl-Trichloroethane, Technical)

If you are developing or manufacturing formulations containing DDT, you are invited to contact Monsanto as a source of supply.

Santobane* — Monsanto's Dichloro-Diphenyl-Trichloroethane, Technical — is the subject of continuing research on the extensive possibilities of this potent insecticide in the control of household pests, as well as in the control of numerous insects that destroy plant life.

Available information on Santobane will be furnished gladly. Write: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

*Reg. U. S. Pat. Off.

MONSANTO CHEMICALS

SERVING INDUSTRY... WHICH SERVES MANKIND

Practical Uses of DDT in Insect Premise Sanitation[1/]

By S. W. SIMMONS, *Sanitarian (R), and* E. H. ARNOLD, *P. A. Engineer (R),*
United States Public Health Service

INSECT PREMISE SANITATION includes the control of those insects about the home that may be involved in the transmission of disease, in the contamination of food, or those that affect physical or mental comfort. In this category falls a large proportion of the activities of commercial pest control operations.

Experience has shown that DDT is, in general, the most widely useful single insecticide for combating household insect infestations. The cost is reasonable, and the results are usually such as would encourage continued patronage. The residual effects of DDT will certainly appeal to the client, and this phenomenon should also be of benefit to the pest control operator. Those operators who have visualized a reduced business by the advent of DDT would seem to have analyzed the situation only superficially. First of all adequate control of household insects with conventional insecticides requires frequent treatments to effect satisfactory results, and the materials and time involved usually make costs more than the average householder cares to pay. With DDT two treatments per season will usually suffice for reasonable control of most insects involved, and this can be afforded by many people who otherwise would not, and have not, used the services of pest control operators.

It appears, therefore, that energetic operators can look forward to building up a regular greatly expanded clientele of satisfied customers. The period between necessary treatments will enable operators to serve this expanded business with no more effort or expense than was normally involved, prior to the advent of DDT.

Use of DDT by individuals will be initially widespread, but many will later lose interest and rely on commercial operators. This will be particularly true of owners of business establishments. Individual use of DDT will often result in unsatisfactory results due to lack of proper knowledge in its application. Many individuals will use the material as a space spray and expect residual effects. DDT residual sprays if not applied with proper care and adequate equipment will cause marking of walls. When these factors are encountered a large number of people will turn to trained operators who have demonstrated their ability to effect adequate and safe control at a reasonable cost. It appears, therefore, that DDT should be an asset to the business and reputation of pest control operators, as well as a satisfaction and protection to their customers.

DDT will be employed in several different forms, most common of which at present are:

1. Solutions: These usually contain 5 per cent DDT in water white deodorized kerosene or comparable solvents. There are many organic solvents that readily dissolve DDT but a large portion of these are either too inflammable, too toxic to higher animals or both for safe use. Solvents of which neither of these factors are known should, therefore, be avoided.

2. Emulsions: Emulsions are prepared by dissolving DDT in a suitable solvent and emulsifying in water with the aid of an emulsifier. A satisfactory emulsion may be prepared by making a 25 to 30% xylene concentrate and emulsifying in water to 5% DDT.

3. Wettable Powders: DDT that has been ground with an inert wettable diluent is now available commercially. All that is necessary in its use is to add the proper amount to water. After agitation the material stays in suspension for a considerable period. Five per cent DDT suspensions are most commonly used and these have proved satisfactory as residual sprays in barns and outbuildings. Such a spray leaves a powdery deposit on walls and is therefore not recommended for use in better appointed homes.

4. Powders: DDT non-wettable powders are widely used and are of particular use in the treatment of flea and roach infestations. A powder containing 10% DDT is most commonly recommended.

5. Aerosols: DDT has been added to prethrum aerosol bombs as a means of increased killing power. Several small aerosol generators of various types have appeared for household use. The dispersion of DDT in aerosol form has a definite place in control of insects, but since the value of such treatments depend upon rapid kills of existing insect populations and not on residual effect, their use by commercial pest control operators will probably be limited.

DDT sprays will be used on a large variety of surfaces, and in order that they may be applied without damage to the walls it is advisable to make a test application in an inconspicuous place, before proceeding with the complete treatment.

Techniques for the use of DDT will undoubtedly undergo further change as more experience is obtained in its use, but the following procedures have been found to give good results for the several insects involved.

Houseflies: Houseflies can be controlled very successfully in homes, restaurants, dairies, barns and other infested premises by the application of a residual deposit of DDT. A 5% DDT spray applied on the walls and ceilings to the point of wetness, but not until it runs off, will form a deposit which will be effective for three months or longer under average conditions.

Applications of the DDT spray is best made with a compressed air garden sprayer or a small orchard type power unit. For wall surfaces a sprayer nozzle which gives a fan-shaped wet spray has been found most satisfactory.

Flies prefer resting on ceilings at night, or around cracks and crevices, along the edge of ceiling moldings and doorways, and care should be taken that the dosage at these points is sufficient. In some instances where the fly infestation is light, fair control can be accomplished by treating these special places alone.

Screen doors and screen windows are also favored resting places for flies as are electric cords and switch cords suspended from ceilings. Screens and cords may be painted with the DDT solution. In some instances DDT dipped strings or strips of bandage hung from the ceiling will aid in control.

In treating homes, it is advisable to spray around the doors on the exterior, and also garbage cans and platforms. Since these areas, as well as screen doors and windows, are subject to weathering the residual effect of the DDT will not last as long as when applied to indoor surfaces.

Mosquitoes: DDT is effective in controlling mosquitoes in the home when applied to all wall surfaces and ceilings as a residual spray. As in housefly control a 5% solution is recommended. When properly applied this treatment results in control over a period of at least three months. In treating particular attention should be given to spraying the dark corners, portions of walls behind pictures and furniture, the undersides of tables and chairs, backs of bookcases and beds and in closets. These are the places where mosquitoes hide during the day.

Treatment with DDT cannot be expected to eliminate completely the nuisance of mosquitoes in the home. Some may enter and bite at once, however, annoyance will be greatly alleviated since many will receive a lethal dose by resting on treated surfaces before they have a chance to bite.

Cockroaches and silverfish: Cockroaches are more resistant to DDT than are flies and mosquitoes, yet control can be achieved by its proper use. A 10% dust is effective and is less poisonous to pets and humans than is sodium fluoride a common roach and silverfish poison. In addition, a treatment with DDT lasts longer than does one with sodium fluoride.

In applying DDT the usual harboring places should be dusted using a small hand dust gun to force the dust into cracks and crevices, along shelving, in back of sinks, into the felt insulation of the motor housing compartment of electric refrigeration units, around pipes, and similar places where roaches hide.

Good results have also been obtained by using a 5% DDT spray alone or in combination with dust for application to the undersides of sinks, shelves, along baseboards, and such places where dust will not adhere.

The effectiveness of DDT should not be hastily judged when used for controlling cockroaches. As with sodium fluoride a week or more may elapse before any marked reduction in roach population is noted. In some instances roaches may be apparently more abundant soon after treatment than usual. This is the surest indi-

FUMIGATION NEWS

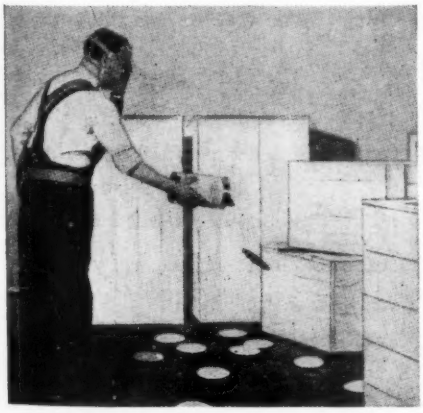
APRIL 1946

Published in the interest of Pest Control Operators and the use of
AERO BRAND HCN DISCOIDS AND CYANOGAS
by Insecticide Department of
American Cyanamid & Chemical Corporation
Kansas City 6, Mo. 30 Rockefeller Plaza, New York 20, N. Y. Azusa, Calif.

HYDROCYANIC ACID IS PREFERRED FUMIGANT FOR WIDE VARIETY OF FOODSTUFFS

Pest Control Operators will do well to investigate the advantages and possibilities of profitable business in the use of AERO* BRAND HCN DISCOIDS for fumigating bakeries and similar "small-scale" food processing plants, food storage buildings, and warehouses. For AERO BRAND HCN DISCOIDS are one of the most efficient and most economical forms of pure HCN for use in fumigating small spaces.

The natural question often arises as to the effect of hydrocyanic acid gas on food-



Throwing HCN DISCOIDS between cases or barrels of stored food commodities insures thorough distribution of the gas.

stuffs. The best answer to such a query is that exhaustive research has proved that hydrocyanic acid may safely be used to fumigate a wide variety of food products without in any way impairing color, texture or flavor.

Hydrocyanic acid is not highly reactive, and will not combine chemically with foodstuffs—especially those ordinarily subject to insect infestation. However, liquid fruits and products such as jams and preserves, unless stored in sealed containers, should be removed. Also, milk and butter, if unprotected, have a natural affinity for foreign odors and should be removed.

Storage buildings and warehouses containing large amounts and many varieties of foodstuffs are regularly fumigated with no harmful effects on the foods, because the gas is rapidly dissipated upon ventilation and all traces disappear long before the product reaches the consumer. In fact, the object of fumigating warehouses and similar buildings is generally to control insect infestation *in the stored material*... food products or other commodities.

Any fumigant is absorbed in lesser or greater amounts by the product being fumigated. With certain fumigants, actual chemical changes in the product may occur. Hydrocyanic acid (HCN), however, does not react permanently with the products under treatment. And although a certain amount of hydrocyanic acid gas is absorbed during fumigation, it is rapidly given off (desorbed) from the commodity during the aeration period. After aeration of 24 to 72 hours, little or no HCN can be detected.

This characteristic, together with the high penetrability of the gas into commodities, which is necessary to effect a kill of insects or eggs deeply imbedded, makes HCN particularly desirable for the fumigation of food products.

Another important advantage of HCN is that the gas functions as a "post fumigant" during the aeration period (while the gas is being desorbed), thus killing any insects which may have survived the initial exposure.

There are precautions which should be observed, however, when fumigating commodities carrying a high moisture or oil content, such as tobacco, nut meats, etc. With such products the desorption of HCN is slowed down, and the aeration period should be extended before releasing the products for public consumption. As a safeguard, the period of aeration under the most favorable conditions (ample air circulation and temperature above 70° F.) should be *not less* than 72 hours.

STORED COMMODITY INSECTS

Mealworms (Adult)

Mealworms are common pests frequently found in damp and moldy materials, such as grain, cereals, etc. They comprise two species, the yellow mealworm and dark mealworm, both alike in habits and nature of damage they do.

Their eggs, which are usually laid in spring when the adult emerges, hatch out in about two weeks. The young larva is at first white, but shortly turns yellow. Full grown larvae,

The mealworm. *Courtesy Canadian Dept. of Agri.*

about an inch long, vary in shade from yellow to yellowish brown in the case of the yellow mealworm, or dark brown in the case of the dark mealworm.

A satisfactory kill of the general run of these insects infesting plants manufacturing, handling and storing foodstuffs and other commodities, can be made with HCN fumigation, and regular periodic fumigation is the best method of keeping the ever-present insect problem under control.

FUMIGATION SAFETY RULES

1. Vacate entire building even though only part is fumigated, as well as adjoining buildings into which gas may penetrate.
2. Make personal inspection of entire premises immediately before releasing gas.
3. Lock all doors and accessible windows; place warning signs thereon. Always guard premises adequately during fumigation.
4. Always wear gas mask; keep it in perfect condition.
5. Beat all mattresses, pillows, bedding, clothing and bedroom rugs; test for presence of HCN before allowing tenants to use.
6. If in doubt, do not allow a house to be occupied on the night of the day it has been fumigated.

Another important factor which will contribute materially to safety in fumigation work is the consistent use of methyl orange-mercuric chloride test papers. These are small strips of paper, which immediately turn pink or red in the presence of hydrocyanic acid gas. They can be placed between mattresses, pillows and bedding to determine the presence or absence of HCN.

Methyl orange test papers are available from Cyanamid in convenient bottles, bearing a combination label and color chart and containing approximately 75 papers. They may be ordered at a cost of 50c per bottle.

*For more information on fumigation with AERO BRAND HCN DISCOIDS and CYANOGAS** Calcium Cyanide, write for free manuals.*

*Trade-mark **Reg. U. S. Pat. Off.

cation that they are contacting the DDT. The nervous reaction which it produces causes the roaches to move about and insures further contact with the poison. As is the case with other insects its effectiveness should be judged by the absence of live individuals and not by the number of dead insects noted.

Continual reinfestation with roaches is common, especially in the South where these pests are active outdoors. Treatment may have to be repeated at monthly intervals in badly infested places that are subject to reinfestation from adjacent sources.

Silverfish which have the same general habits as roaches are also controlled by the same treatment.

Bedbugs: Until the advent of DDT, cyanide fumigation was the most effective means of bedbug control. This treatment was difficult, dangerous, and expensive. Now these pests can be eliminated from the home for a period of six months or longer by a single properly applied application of 5% DDT spray. The solution or emulsion should be sprayed on mattresses and springs until they have a misty wetness, and into crevices in the bedstead. If infestations are particularly heavy, spraying of the walls and base boards of the bedrooms also is recommended. As a general procedure, spray all cracks and other hiding places of the bugs. Relief can be expected in 48 hours after application.

Fleas: The source of fleas infesting a home is usually the family pet, frequently a cat or dog. Occasionally rats are the source of an infestation in homes, and more often in business establishments. Certain of the several species of rat fleas are dangerous from a public health standpoint because of their ability to transmit murine typhus from rat to man.

A high degree of control of fleas can be attained by dusting infested premises with 10% DDT dust. The sleeping places of pets are usually most heavily infested and should be given particular attention. If the pets have the run of the house the infestation may be general. In that case apply a light film of dust to the floors and allow it to remain for a day or two before sweeping up. If applied on wooden floors, the dust can be swept up crosswise of the boards, thus leaving a deposit in the cracks where flea larvae may develop.

If rats are the source of infestation, liberal quantities of 10% DDT dust should be pumped into rat holes and harborages with a cyanogas foot pump duster. Dust should also be sifted liberally on active rat runs. Control of rat fleas depends largely on the rat picking up the dust on its body and carrying it into its harborage where the fleas breed. If the dust is allowed to remain in an establishment treated in this manner, few fleas will be present over a period of five months or more.

If a dust is undesirable, a 5% DDT spray (either in highly refined kerosene or in an emulsion) may be applied to the rugs, furniture, and sleeping places of pets. The spray should be applied in an inconspicuous place on the surface to be treated at first to determine whether the solvent will stain. About one quart of 5% spray will cover 250 square feet of surface. Little is known at present regarding the residual effect that can be expected from this type of treatment.

Most dogs of average size may be dusted safely with about a tablespoon of 10% DDT powder. Treatment of cats is not recommended since they lick themselves and may acquire a toxic dose. Neither cats nor dogs should be treated with a DDT solution since it may be absorbed directly through the skin.

Brown dog tick: Brown dog ticks not only infest dogs, but where the dog is allowed access to the home, are often spread throughout the house. They do not usually attach themselves to other animals, but their presence in the home is annoying.

The brown dog tick is another pest, hard to control by the usual methods, which succumbs to DDT. According to The Bureau of Entomology and Plant Quarantine (1), infestations in the home may be treated either with 10% DDT powder or 5% spray. Treat the floors, base boards, and under rugs where eggs may be laid. Young ticks on emerging will cross this barrier in search of food and may be killed, since this is the stage in which they are most susceptible to DDT. DDT dust should be left on fabrics, floors and other places for about two weeks. When a spray is used it is advisable to treat the walls as well as the floor and baseboards.

Infested dogs can be treated with 10% dust. Rub about a heaping tablespoon full into the hair all over the body. It is important to distribute the dust evenly over the dog's body since the ticks do not move about actively after they once attach.

Ants: Most ants may be controlled by treating the points of entrance to the home with a 5% DDT spray. Routes which the ants travel, such as into cupboards, shelves, drawers, up table legs, and along base boards, may also be sprayed. This type of control is based chiefly on killing the ants in the house and will seldom eliminate the colony. For this reason, and also because the spray is usually applied to places where it is quickly removed by scrubbing and normal wear, the treatment will be of relatively short duration and may have to be repeated after several weeks.

If the colony can be found outdoors a 10% powder applied to the mounds will usually give good results. When a spray is applied to ant mounds, the ants are often repelled and may make new entrances and continue the colony.

Sandflies: The tiny sandfly, whose bite is so irritating is a troublesome pest along much of the Atlantic and Gulf coasts. This pest is so small that it passes through the mesh of the usual screen doors and windows. A 5% DDT solution in No. 10 motor oil painted on the screens of windows and doors gives some degree of control. Since the flies are attracted in great numbers to lights, the walls and ceilings around the lights should also be sprayed. This treatment should give fair relief for several weeks.

Clothes Moths: Fabrics impregnated with DDT will kill the larvae of clothes moths. The ordinary surface spraying of clothing, however, may not give satisfactory larval kills, since they usually are embedded deeper in the fabric. Many of the adult moths will be killed by such a treatment, however, and spraying of clothing with 5% DDT will aid in control. The inside of closets, trunks, and other storage places should also be treated.

General: The application of DDT in homes, restaurants and other business establishments should be made with a few precautions. Although DDT is not likely to cause toxic symptoms in humans when taken in minute amounts, precautions should be taken against spraying exposed foods, water, or dishes. When applying oil solutions or emulsions the rooms should be well ventilated as fumes of some of the solvents frequently used are slightly toxic. Oil solutions and emulsions should not be used to disinfest pets since DDT in solution is absorbed through the skins. Oil solutions are also inflammable and should not be sprayed near open flames.

In treating interior surfaces where an obvious residue would be objectionable, permit the sprayed areas to dry before removing any excess. Smearing will result if the wet surface is rubbed. Excess residue, if any, can be removed from walls with a clean cloth after drying. Spots can be removed from glass and floors with kerosene or mineral oil.

When treating fabrics or valuable wall surfaces, it is often advisable to test out a spot in an inconspicuous place before proceeding with the treatment to see if staining will result. Some synthetic fabrics are often dissolved by the solvent of the spray solution, and should be treated with caution.

REFERENCE

(1) Anon: Suggestions regarding the use of DDT by civilians. U. S. Dept. Agr., Agr. Res. Adm.—USDA 1574-45-1, August 22, 1945.

[1] From Malaria Control in War Areas (Henry R. Carter Memorial Laboratory), States Relations Division.

"Food Preferences of the Firebrat"

Summary.—1. A method was developed so that the attractiveness of foods to the firebrat, could be evaluated.

2. The firebrat is capable of selection among foods equally available.

3. Different foods or combinations, totaling 138 in number, were evaluated for the firebrat. Fifty-three of these were re-evaluated.

4. A number of foods or food combinations have been found attractive to the firebrat. Because of ease of mixing and availability, wheat flour 85 per cent, powdered sugar 15 per cent appears to be the food combination most practical for use in baits for this insect.

5. Sugar, when added to some baits, improved their attractiveness.

6. Salt did not improve the attractiveness of flour.

7. A combination of certain baits proved more attractive than any of the component parts.—6-30-45.

B. G. Berger, Illinois Natural History Survey, Urbana, Ill. Jour. Econ. Ent., October, 1945, *Vol.* 38, *No.* 5.

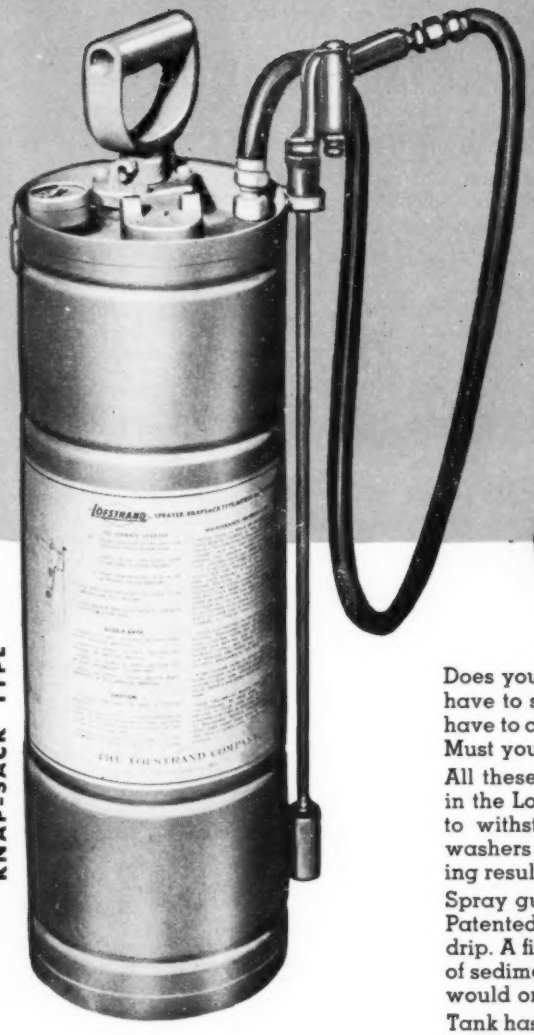
End Sprayer Troubles

LOFSTRAND

INSECTICIDE

SPRAYER

STAINLESS STEEL
LEAK-PROOF
CORROSION RESISTANT
PRECISION-BUILT



KNAP-SACK TYPE

Proclaimed by the Dep't of Agriculture as the most durable, rugged sprayer built . . . as the most satisfactory for residual or space spraying.

Does your sprayer leak? Do you have to wear gloves when using it? Do you have to stop and pump air every few minutes, or pump continually? Do you have to clean it out every time after using, wasting a lot of your valuable time? Must you frequently oil and replace gaskets, washers and hose?

All these troubles, usually encountered in a sprayer, have been eliminated in the Lofstrand. It is constructed of stainless steel and machined brass parts to withstand any corrosive action of insecticides. The hose, gaskets and washers are of a special synthetic material made specifically to resist swelling resulting from petroleum base solutions.

Spray gun is leak-proof; has easily gripped, accurately controllable trigger. Patented valve in spray gun has quick, positive shut-off that prevents nozzle-drip. A fine mesh strainer, through which insecticide is poured, keeps out bulk of sediment; second strainer in nozzle extension keeps out fine particles which would ordinarily clog nozzle.

Tank has two gallon liquid capacity; air pressure up to 60 lbs. Accurate gauge to register pressure. Air pressure has to be raised to 50 lbs. only twice, to spray two gallons of liquid. Only $29.50.

If your distributor does not carry this Sprayer, send his name to us, along with yours, and you will be taken care of promptly.

Some territory still open for distributors.

"Of course it costs more . . . but it's worth more than it costs."

THE LOFSTRAND COMPANY • 956 SELIM ROAD—SILVER SPRING, MD.

HILL TERMITE CONTROL SYSTEM

By W. B. HILL

THE HILL Termite Control systems have perfected and patented a system of termite control (Subterranean) for new construction. One of its main features is installation of a slotted pipe at time of construction in all inaccessible areas, which include dirt filled porches, stoops, steps, sunparlors, fireplaces, etc., and annually inserting a perforated pipe into slotted pipe and forcing under pressure a toxic chemical into these slotted areas.

We are going to make an effort to distribute this system nationally through established termite control operators, first because we think it is the proper method, and, second because The Federal Housing Administration will not accept any patented article or commodity that is handled exclusively through one dealer or operator. We believe that with our policy of allowing any established termite control operator in any section to buy and install this system and having no exclusive agents anywhere we will receive more favorable acceptance from the FHA.

Our contract with the established operator will be simple and have few requirements. They will not be required to pay any money for a franchise, or be compelled to purchase any materials until they need them, for actual installations. We will reserve the right to only sell and ship systems to operators to sell and install in their immediate territory. In other words no operator in Dallas could buy and install any Hill systems in Houston and no operator in Houston could buy and install any Hill systems in Dallas. Also no systems will be sold to any national concerns to be shipped into any territory. All orders must originate and be shipped to installation points.

From 1930 to 1939 our company treated several thousand properties in fourteen states for many of the large insurance companies. These were all foreclosed properties that they were reconditioning for the market. It was necessary for us to deal with their maintenance men and in several places where our service crews became friendly, these men picked up knowledge about chemicals, operation, equipment, etc. and then had their companies buy equipment and chemical and started servicing their properties, In addition to company properties they soon started treating outside properties for some of their company's customers, and later some of these men branched out into the termite business for themselves.

The point we are trying to bring out is that it is easy to start some outsider in the termite business. In and around Memphis over half of the people who have gone in the termite business in the last fifteen years have been ex-terminix salesmen. Incidentally over one hundred and fifty termite concerns and individual operators have operated in Memphis during these fifteen years and faded out of the picture. This has done the whole industry a lot of harm and makes it tougher for those trying to carry on.

Now the Hill system has only two possible methods of national distribution, one is through the termite industry and the other is selling direct to the building industry, contractors, National Association of Home Builders, lumber yards, etc.

Selling direct to the group mentioned above has some very attractive features to us as it would produce four different sources of profit. 1—We would sell them the materials for the installations, 2—Treating equipment including compressor, hose, electric drills, etc. 3—Chemicals for use in the system. 4—A trained technical man to teach their superintendent and others procedure.

However this method would in time seriously affect the whole termite industry, as these trained men would in time start treating existing houses for some extra money and later get into the termite business for themselves. They would not be governed by any rules or ethics, and of course could not qualify for several years as members of the NPCA.

That is why we say emphatically that the Hill System or any systems that will come later should be developed through the termite control industry.

The need for an effective, practical and economical system for permanent termite control has long been known. Vitally concerned is the huge lumber industry. For many years the lumber industry has been alarmed at the heavy increase of the use of substitutes for lumber on account of the termite fear complex. Steel, concrete, brick and many other materials are being used in places where lumber formerly served. The Hill system or any other practical system should receive the support of the lumber industry as it helps them combat the invasion of substitutes for lumber. And for the termite control operator there is positively no time as favorable as construction time for the competent operator to do a thorough workmanlike job of termite-proofing.

For fifteen years we have endeavored to sell architects, contractors, large home builders and private builders on the idea of treating houses for termites at time of construction, but we could never make any headway. It simply did not make sense to treat a new house for termites, when there were no termites in it. One thing that always blocked us from selling termite prevention was that termite-proofing was always listed as an extra, and invariably the prospective home builder who had $7,000 to spend had a $9,000 plan in mind and when the bids were $2,000 higher than his budget something had to be cut out. Termite proofing was always one of the first items to get the ax as it was something that could be done later.

But now the story is different. The Hill system is built into the house like plumbing, wiring, heating, etc. and is incorporated in the plans and specifications and is not treated as an extra.

A large number of prospective home builders have visited our laboratory and discussed the Hill Termite control system for their new homes. We have secured many individual orders for the installation when they build and in addition we have secured orders from two prominent members of The National Association of Home Builders in Memphis, Wallace E. Johnson, Inc., 100; and John B. Goodwin Realty Co., 81. Incidentally the order from John B. Goodwin Realty Co. is for an entire new subdivision of 81 houses.

There has been a steady trend towards prevention instead of cure in the field and The Hill system should be the forerunner of other and better methods to take advantage of this new and undeveloped market. J. W. Gunn of California has invented a new system and others will be developed from time to time. The day will come when it will not be a question of whether termite proofing is incorporated at time of construction but what method will be used.

Any protection against termites at time of construction serves a good purpose, treated lumber, steel beams, termite shields, etc., but we are absolutely convinced after years of close observation and study that to get maximum protection some practical overall system must be incorporated at time of construction and be followed up by annual maintenance service by experienced termite control operators.

In addition to the property owner The Hill system affects different branches of the building industry. For the property owner—eliminates the fear and worry if termites are attacking his property from some hidden source. Both accessible and inaccessible areas are controlled by the Hill system.

For the Builder—eliminates any future complaint or claim from customer about termites or termite damage. This overall system is installed and serviced at time of construction and property is delivered to buyer free from any termite infestation. Buyer then has privilege of carrying on annual maintenance service contract with termite control operator on an annual fee basis.

For the Realtor—the assurance of selling client property free of termites or termite damage. Also avoids delay in getting termite inspection report in event of resale. Termite inspection reports are required on many real estate transactions and also most mortgage loans require a report both on termites and structural insecurities.

For the Architect—the satisfaction of incorporating all established safeguards in preventing future termite damage.

For the mortgagee—the permanent protection of the investment and assurance that in case of foreclosure there will be no costly termite damage repair bills when property is reconditioned for the market. As we stated before we treated houses foreclosed by many large insurance companies over a wide area. One of the largest items in reconditioning these houses for the market was repairing termite damage.

For Control of INSECT PESTS...
Use
Du Pont
DEENOL
DDT
Insecticides
For "long lasting" control of many common insect pests, use "DEENOL" DDT insecticides especially prepared by Du Pont for commercial and industrial use. Five different preparations—each designed for specific uses—all of them formulated for safe, easy and effective application.
"DEENOL" DDT insecticides give control up to several months, depending upon use.
For a general guide, consult the chart below showing use of "DEENOL" DDT formulations. For detailed information, write for our folder on "DEENOL" DDT. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Del.
Follow this Guide

YOUR PROBLEM	FOR THESE INSECT PESTS				Specially for crawling insects such as cockroaches, ants, bedbugs, ticks, silverfish, lice.
	Flies, ants, gnats, mosquitoes, fleas, ticks, wasps, cockroaches, carpet beetles, moths, silverfish, bedbugs, weevils, cadelle, and other stored product insects.				
YOUR PLACE OF USE	UNDER THESE CONDITIONS				
	On surfaces where *wetting* by water and *visible residue* are not objectionable.	On surfaces where *wetting* by water is not objectionable and *visible residue* is not desired.	On surfaces where *wetting* by water *is* objectionable and *visible residue* is not desired.	For large users who may wish to prepare their own spray mixtures by adding solvents.	On floors and baseboards, in cracks and crevices of woodwork, dark places behind pipes and other places insects infest.
	— USE —	— USE —	— USE —	— USE —	— USE —
YOUR PRODUCT	**DEENOL 50-F** Wettable powder; mix with water, use as spray. DDT—50%.	**DEENOL 25-EM** Emulsifiable oil; dilute with water, use as spray. DDT—25%.	**DEENOL 5-H** Ready-to-use oil spray. DDT—5%.	**DEENOL 25-C** Concentrated oil; dilute with a solvent, use as spray. DDT—25%.	**DEENOL 10-A** Ready-to-use dusting powder. DDT—10%.

DU PONT
REG. U. S. PAT. OFF.

DEENOL
TRADE MARK

DDT INSECTICIDES FOR INDUSTRIAL USES

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

Another important factor has developed now that makes it more important than before to provide for prevention instead of cure. Formerly most mortgages were refinanced every five years, and the mortgagee could require a termite inspection at each renewal period and minimize the chances of a major termite repair bill. Now most loans are made for twenty years or more.

For the lumber industry—this system encourages the liberal use of lumber, anywhere, any kind, and quantity.

Articles about the Hill system have appeared in American Builder, Building Supply News, Practical Builder, Southern Lumberman, Pests and others. Below we quote a letter that we write with all folders that are mailed:

"At your request we are enclosing folder describing The Hill System of termite control for overall installation in new construction only.

"However in that special equipment is required in installing this system, annual maintenance service with toxic chemicals being necessary, together with a thorough knowledge of using modern scientific termite control methods, we can only furnish this system to established termite control operators to be installed and serviced by them.

"If you have no preference we will have some established operator in your vicinity call on you."

Now we have tried to get over the point that there is a specific need for termite control systems for new construction and it is strictly an industry problem. There is a very marked difference in termite proofing houses at time of construction from treating existing houses for termites. In an existing house it is possible for termites to have severely damaged studding, panelling, interior woodwork and even rafters in the attic none of which was visible at time of treatment. Later if this damage is discovered there is always an argument whether it was done before or after treatment.

The specifications shown in our folder are for our particular section and need not be followed by other operators. It is up to each individual operator to incorporate such specifications that best meet his particular section. Any specifications used in any section must be furnished us.

New Insecticide Seven Times More Toxic to Flies Than DDT

However, It Is Extremely Deadly to Bees—Radio Proximity Fuse May Enable Airplanes to Extinguish Forest Fires With Water Bombs.

WASHINGTON.—Congress heard today of a new insecticide seven times as effective against flies as DDT but lacking any such popular nickname. It still is known by its full laboratory name, benzene hexachloride.

Disclosure of the new material was made to the House appropriations committee during hearings on the 1947 Agriculture department supply bill which went to the House floor today.

Preliminary tests, department experts told the committee, showed benzene hexachloride to be seven times more toxic to flies than its war-famed cousin, DDT, and effective against many insects not bothered at all by DDT.

"It has shown the most encouraging results on the whole group of cotton insects of any material we have found," the department reported.

But not all the news about benzene hexachloride is good, the department admitted. It is "extremely toxic" to bees, while DDT is not.

A wartime invention may result in large scale fighting of forest fires by airplane.

The development is the radio proximity fuse which makes possible split-second release of plane-carried containers filled with water.

The new method was outlined to the House appropriations committee by P. A. Thompson, chief of the Agriculture department's forest service fire control division.

"This project is just in the discussion stage at the present time," he reported, "but they (the army) are quite enthusiastic about the possibility of utilizing large bombers which carry 6,000 or 8,000 or 10,000 pounds of water for the purpose of dropping it on fires.

"That project . . . was not considered feasible until the development of these so-called proximity fuses. They have a radio set in them by which they can spew the water out at any predetermined elevation about the terrain.

"Formerly the containers would drop and hit the ground and spill most of the water into the crater which they made when they hit and the spread of the water was too small to be effective."

The hen has a rival in the soybean—at least in one use for eggs.

Agriculture department officials reported that laboratories have developed from soybeans "an improved whip material" which can replace eggs in making meringues and other confections.

The new material is extracted from soybean flakes and then a little pectin and flavoring material is added.

—*Kansas City Star.*

Fourth Annual Canadian PCO Conference

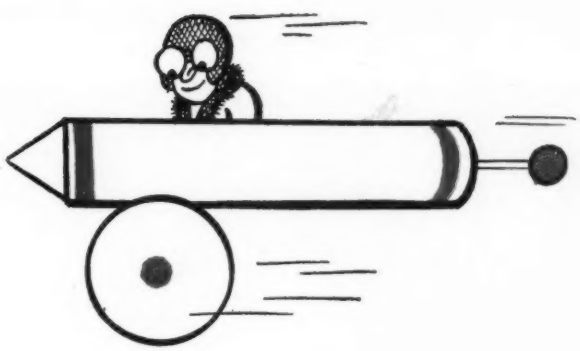
Story and more pictures of the Canadian PCO Conference will appear in the May issue.

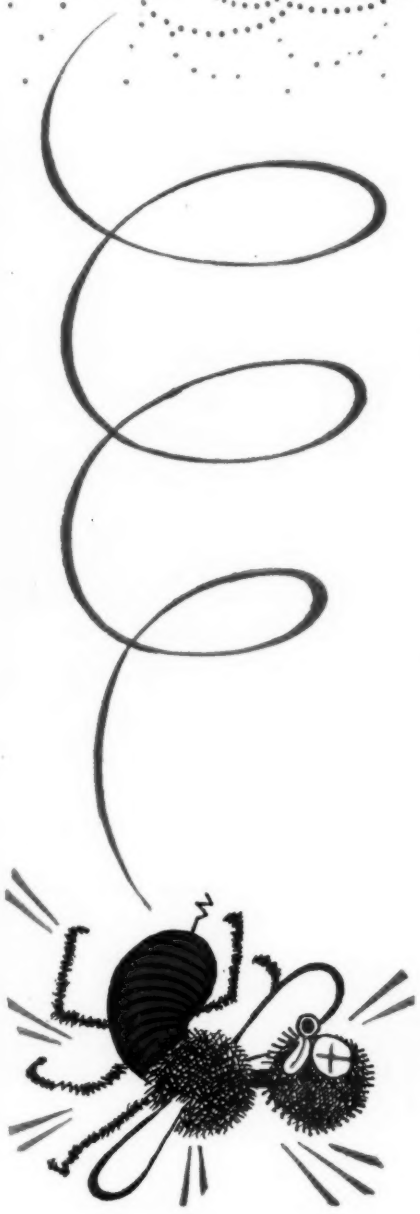
2—The Laboratory Production of DDT is demonstrated at the Canadian PCO Conference held at University of Montreal, February 18 to 21, 1946.

1—Questions from the audience being answered by the experts. Left to right: C. Graham Mac May, Dr. V. M. Froehlicher, Dr. Alfred Weed, Dr. C. R. Twinn, Ernest Mills.

3—Insect Anatomy and Identification.

Pyrefume Super 20





We'll "Knock Down" Millions More!

PYREFUME Super 20 is a pure pyrethrum extract guaranteed to assay 2 grams pyrethrins per 100 cc., or expressed by percentage, 2½% pyrethrins. It is manufactured by us from pyrethrum oleoresin, purified, dewaxed and deresinated aerosol grade, by addition of odorless base to reduce it eight times from 20% to 2½%. It is light in color, reducing possibility of stain to a minimum.

Demand for Pyrefume 20 has increased substantially because it assures the immediate and spectacular "knock down" expected by buyers of household space sprays.

Ask for samples, and quotations on Penthanco ... a concentrated fragrance developed particularly for the household fly spray.

S.B. PENICK & COMPANY

50 CHURCH STREET
NEW YORK 7, N. Y.
Telephone: COrtlandt 7-1970

735 W. DIVISION STREET
CHICAGO 10, ILL.
Telephone: MOHawk 5651

Personalities on Parade

At Our Recent Purdue Conference Held January 28-31, February 1, 1946.

1—Justus C. Ward weighing and mixing 1080, ANTU, CASTRIX, ARSENIC in preparation for rat tests.

2—Justus C. Ward and Milton Caroline placing poisoned rat baits in trays for the test.

3—Interest created at test cages where 1080 was used.

4—Galen C. Oderkirk explaining the use of 1080 in water solution test.

5—The results of 1080 water solution test.

6—"Our Bill" seems to be enjoying of those intensively interesting sessions that took place.

Continuing to give outstanding performance...

DU PONT SOIL COMPOUND NC *for Repelling Termites*

Du Pont Soil Compound NC has proved its ability to give greater and longer termite control than is usually expected of a soil treatment. It can add greatly to the effectiveness of your termite-control technique, too.

This oil-soluble organic compound is economical to use. Only four ounces are required per cubic foot of soil to give effective control. It is insoluble in water and does not leach nor seep with intermittent rainfall.

As a pest-control operator, you will find it valuable to be familiar with Du Pont Soil Compound NC and its remarkable resistance to termite attack.

Write today for detailed information. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

HISTORIC NEW ORLEANS

Second of a series of articles on historic and colorful New Orleans, NPCA's 1946 Convention City.—Ed.

NEW ORLEANS was founded in 1718 by Jean Baptiste le Moyne, Sieur de Bienville, one of the greatest colonizers of France in America. He chose the site of the new town, which he hoped would eventually become the capital of the colony of Louisiana on a slightly higher level of ground nestling in a great sweeping curve of the Mississippi River a little more than a hundred miles from its mouth.

Because the French ministers were unable to visualize the possibilities of the site, and refused to cooperate with Bienville in developing it, the first few years of the city were not very promising. Father Charlevoix, one of the first visitors to the struggling settlement, wrote in 1722 that it consisted of a hundred barracks, a large wooden storehouse, a few tents and two or three houses which, he observed, "would be no ornament to a village of France."

In that same year, however, Bienville, backed by Adrian de Pauger, finally succeeded in having the capital moved from Biloxi to New Orleans and the real history of the city began. De Pauger, who was assistant to Le Blond de la Tour, Royal Engineer, drew up the plans of the city according to the French model. He marked out a square around which the important public buildings of the new community were to be located and from which the city was to develop. The Square, which was called the Place d'Armes and in 1849 the name of which was changed to Jackson Square, was located on the banks of the river and the new buildings, including St. Louis Church, the predecessor of the present Cathedral, placed back of it.

Thus was the beginning of New Orleans, in an area which the city has long since outgrown and which is known today as the French Quarter, or Vieux Carre.

This French Quarter, the outstanding New Orleans attraction from the visitor's point of view, is very much the same now in appearance as it was towards the close of the French and Spanish dominations in the late eighteenth century and is, in fact, a veritable treasury of historic lore—romantic and picturesque. The straight, narrow streets, the quaint architecture, the exquisite wrought-iron railings, the graceful fan windows and the charming little patios or courtyards are a never-ending fascination.

As in most other colonies, the settlers did not at first feel any too secure and hesitated to build along permanent lines. But with the passing of time it became evident that New Orleans was destined for permanence and construction took on a more solid basis. Probably the oldest building in the Mississippi Valley is that known as Madame John's Legacy which was built in 1727 and is still in an excellent state of preservation. Vieing with it in age is the Ursuline Convent which was begun in 1724 but which, it appears from the records, was not completed until 1734. These two ancient buildings, both of them exceedingly interesting not only because of their age but architecturally as well, were built when New Orleans was still a scattered community with the dividing line between town and country practically indistinguishable. It was not until 1750 that the city's limits were definitely marked out by the construction of a wall and moat around the city along what is now Esplanade Avenue, Rampart Street and Canal Street.

It was during the latter part of the 18th century that Jackson Square, or the Place d'Armes as it was then known, began to take on the appearance that it has today. The old church that had been built in 1727 and which was destroyed in the conflagration of 1788 was replaced by one constructed with funds supplied by Don Almonester y Roxas, a wealthy Spanish grandee. The Cathedral as it stands today is much altered in appearance from the low-slung structure with the two minaretish steeples which in 1794 was such a source of admiration for the French and Spanish citizenry. Yet, in spite of its alterations and repairs during the past 144 years, it is still the same St. Louis Cathedral in which the Creoles were want to worship in the early days of the city.

Equally as venerable as the Cathedral is the famous Cabildo, erected in 1795, which is named after the Spanish governing body that once met within its massive walls. In this imposing structure, incidentally also made possible by the generous purse of Don Almonester, took place probably the most important historical event in New Orleans. In its Sala Capitular on the second floor, now the principal room of the state museum, the dignitaries of France and the United States met in December, 1803 to sign the formal papers that transferred the vast Louisiana territory to the American republic and determined the direction of growth of the entire nation.

The other buildings on the Square, while not as historically interesting as these two, contribute much to the charm and appeal of this section. The Presbytere, also next to the Cathedral, is nearly identical in appearance with the Cabildo and adds much to the symmetry of the whole. It was begun prior to its most famous twin but because of lack of money was not completed until 1817. At present, it, too, is part of the state museum and houses the natural history division. Flanking the Square are two long two-story buildings with some of the finest castiron work in the city gracing their block long balconies. Known as the Pontalba apartments they are the first buildings of this type in America and have in their day housed such notables as Thackeray and Jenny Lind.

The main appeal of the French Quarter, of course, is in its architecture. This is not either wholly French or Spanish, but rather a combination of the two with modifications made necessary by local climatic and topographic conditions. One of its most striking characteristics is the extensive use of ironwork, either wrought or cast, on the balconies, practically the only decorative feature of the severely plain facades of the Vieux Carre homes. Fan windows, spiral staircases and large, high-ceilinged rooms add to the charm of the interior of these old houses. But most appealing of all are the cool, flagstoned courtyards which were used in the place of external gardens and which are planted with colorful semi-tropical shrubs and flowers.

With the coming of the Americans in 1803, the French Quarter began to lose some of its importance although it was to be many decades before it would become in the main a charming memento of the city's past. As was to be expected, the Creoles, a proud clannish race, did not greet the Americans with open arms, nor were the latter, it must be said, over anxious to fraternize with the Creoles, looking upon them as a race much too addicted to pleasure and the good things of life and not seriously enough inclined. As a result, a feud that would have done credit to Kentucky mountaineers reared its head in New Orleans and the Americans, ostracized in the Vieux Carre, decided to move their shops and homes across Canal Street, and founded what was almost an entirely different city.

The Garden District is what the residential section they established is known as today. A region of beautiful mansions half-hidden in a profusion of great live oaks, sweet-smelling magnolias and many other varieties of trees and boasting large gardens which are in some cases a block in area, this section is a priceless relic of a bygone day in one of the most notable chapters in the history of New Orleans.

Not long after the beginning of the American domination the city was threatened by an invasion of the British which, if it hadn't been repulsed, would have put an entire different complex on the history of this section not to say anything of the United States itself.

It was during the War of 1812 that the British decided to attempt control of the Mississippi Valley and selected New Orleans as the key city in their attack. In 1814 a British fleet appeared off Barataria Island which was then the headquarters of the brothers Jean and Pierre Lafitte, notorious pirates and smugglers. All attempts by the British to bribe these men, including the offer of a captaincy in the British Navy to Jean Lafitte, failed and their services were tendered to the defending Americans. After some hesitation on the part of officials, this offer was accepted and the pirates fought side by side with Andrew Jackson's Kentucky riflemen and Louisiana militiamen and defeated the British in the Battle of New Orleans January 8, 1815.

The site of this battlefield is now a park and is marked by a giant obelisk of white marble, set on the old plantation of Chalmette de Ligny, a short distance below the city. Nearby are the Versailles Oaks, said to be the finest grove of live oaks in the world, a half-mile long avenue of these majestic trees, their great spreading branches forming a verdant panoply so thick that the sun has difficulty to penetrate it.

The outcome of the War of 1812 decided once and for all in whose hands control of the Mississippi Valley was to be. The great river, its tributaries and the fertile lands through which they flowed had long been a bone of contention among major

The Safest, Most Effective Aerosol Dispenser on the Market

Here's the DDT aerosol dispenser that's a favorite of Mrs. Housewife everywhere and a *natural seller* for dealers and jobbers. The refillable Regal MIST-O-MIZER is the only aerosol dispenser in production designed solely for civilian use. It is NOT surplus material. MIST-O-MIZER is backed by an organization that gained its experience filling millions of dispensers for the government with NEVER a rejection for quality.

So simple to operate that a child could use it, MIST-O-MIZER has a safety control wheel which keeps fingertips a safe distance from chemical contents. Container of heat-treated, shatterproof steel exceeds I.C.C. requirements for safety, and copper brazing assures a spotless interior prior to filling.

Attractively packaged in two-color sales-getting cartons, the Regal MIST-O-MIZER with the two-color label conforms with all requirements of the Department of Agriculture and the Public Health Service. A plastic seal on the release valve guarantees receipt of a full container.

Get in touch with Regal today for details on the selling arrangement for this refillable sales-getter! See for yourself how effective the MIST-O-MIZER's natural spray, which shoots straight upward and settles naturally in every nook and cranny, can be in killing household pests. Write, wire or phone for your shipment now.

REGAL CHEMICAL CORPORATION

115-117 DOBBIN STREET • BROOKLYN 22, NEW YORK

European powers, and even after the United States had secured full control by purchas efrom France, England still cast longing eyes toward it. But the decisiveness of the Battle of New Orleans put an end to British hopes.

With the sense of security that followed, plus a rapid development of the entire valley, New Orleans experienced a period of prosperity which has hardly since been equalled and which reached its apogee in the decades before the Civil War when it was one of the two or three greatest and most important cities in America. It was during this period that the golden age of New Orleans architecture took place. The Vieux Carre was almost entirely neglected in the wave of new building that swept across the city and although many influential Creoles attempted to stem the tide that threatened to sweep the Quarter into oblivion they did not succeed. The Pontalba Apartments, for example, were constructed in 1849 and were located in the heart of the Quarter primarily as an attempt to woo back business and financial houses into the old section of the city. That these and other attempts failed is largely the reason why the French Quarter has remained unchanged during the past 140 years.

These ante-bellum days produced some of the greatest names and most characteristic buildings of the South. Such famous architects as Henry and Benjamin Latrobe, the two James Galliers and J. N. de Pouilly designed buildings which are noted to this day for their classic simplicity and good taste and are even yet set up as models. Some of the products of these men are the old Bank of Louisiana, now the American Legion Home, the classical City Hall, the Pontalba Apartments, St. Augustine's Church and other buildings no longer in existence such as the old St. Charles and St. Louis hotels which were among the most famous in the country. St. Louis Cathedral underwent much change during this period and it can be truthfully said that de Pouilly designed it as we now know it. The magnificent Garden District homes, which have attracted nationwide attention as a unique and beautiful form of architecture, were the work of these men and their contemporaries. Likewise many of the plantation homes found along winding Bayou St. John made their appearance during this period.

In the court of its long life New Orleans has had an unusually colorful history. Romance and adventure have stalked every page of its history and have left their imprints on the modern city. It is in being able to recall these signs of the past in the landmarks of the present that one finds so much to fascinate him in New Orleans. For while New Orleans has grown it has also preserved, comparatively little which has occurred here in the years of its history not having been in some way carried on to the present day. No other city in the country, it can safely be said has as many evidences of its past still in existence as has New Orleans to intrigue all who come into contact with them.

Rats in Wake of War Oust Birds

North American Newspaper Alliance

WASHINGTON.—Now it can be told—there was a second war going on during the last four years, unknown to the men who fought the Japs.

Interior Department ornithologists are just beginning to find out about this second war, whose casualties they describe as perhaps even more severe than those in the first.

This war took place in the animal kingdom. Pitted against each other were an estimated 3,000,000 rats and perhaps 1,000,000 birds. Like man's war, the action took place in the far reaches of the Pacific.

Here is what ornithologists (they study birds) say happened:

When the G. I.'s and marines stormed such desolate, coral-studded islands as Midway, Tarawa and Iwo Jima, thousands of rats followed them. This is not because G. I.'s like rats; but because, as scientists explain, rats almost invariably follow man in his invasion of new territory.

The rats, good propagators, multiplied by the hundreds of thousands. As they increased, they squeezed into the shelters and burrows of gulls, petrels, albatross, shearwaters, native canaries, layson rail and laysan finch and other ground-nesting birds.

Growing bolder and hungrier as their numbers soared, the rats soon established themselves beyond eradication and promptly attacked and destroyed one after another of the populations of native birds.

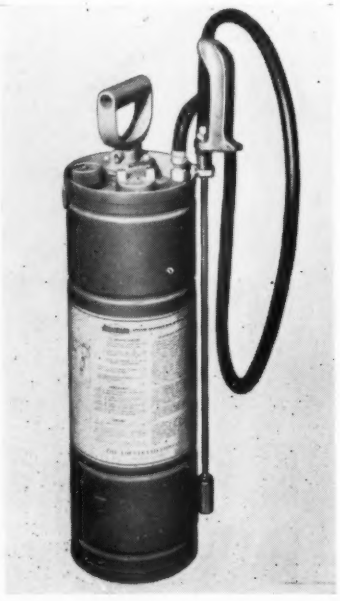
Today, not a single bird of the rarer species remains on some Pacific Islands. In some sections, whole areas of birds have been wiped out, and the net effect has been "almost disastrous," according to one ornithologist.

"It will take at least five years to effectuate measures for recovery, even in those few cases where it appears possible to repair the harm done," the scientist says.

Sprayer For DDT

Here is a sprayer, it is claimed that won't leak; is corrosion resistant; doesn't require pumping every few minutes; is easy to clean; with a double strainer set-up to prevent clogging; with gaskets, washer and hose of a special synthetic material made to resist swelling resulting from petroleum base solutions.

The Lofstrand Sprayer is constructed of stainless steel and machined brass parts to withstand any corrosive action of insecticides. It is as rugged, durable and simple as possible. Its design eliminates many troublesome washers and other parts.



There is no trigger on the spray gun. A patented valve in the hose has a quick, position shut-off that prevents nozzle-drip. A fine mesh strainer through which insecticide is poured, keeps out bulk of sediment; second strainer in nozzle extension keeps out fine particles which would ordinarily clog nozzle. Tank has a two gallon liquid capacity; air pressure up to 60 lbs. Sprayer, though sturdily constructed of stainless steel and brass, is lightweight and can be carried as a knapsack, as well as by hand. To spray two gallons of liquid, it is only necessary to pump the pressure up to 50 lbs., twice. Pressure fingers on hose, at handle, releases spray from new type gun. No trigger to replace. Because of this construction, it is impossible for gun to leak. Accurate pressure gauge on top of tank to prevent operation of unit with insufficient pressure. Insecticide is poured through separate opening. Large, fine-screen strainer is just inside this.

The Lofstrand Sprayer is recommended by the manufacturer for use around food processing and other industries, poultry farms, dairies, barns, homes, gardens, hotels, restaurants, hospitals and other institutions.

This sprayer, the manufacturer states, was developed for DDT particularly, at the request and in conjunction with the U. S. Army Engineers and has been specified as their standard model and make. Since using it, the Army has found that they saved time, money and personnel. The Lofstrand Company was thrice awarded the Army-Navy "E" for production.

The Lofstrand Company, 956 Selim Road, Silver Spring, Md.

Insect Damage to Nylon

Conclusions.—Nylon which is finished completely or which has been finished through the scouring process is very susceptible to damage by the larvae of several species of carpet beetles, and especially those of **Anthrenus verbasci.** The important factor in the attractiveness is not connected with olfactory stimulation. The larvae do not digest the eaten nylon although it is conceivable that they could acquire a small amount of nutritive value from it. From observations made it appears that the tactile senses of the insect are of great importance in their selection of food, therefore, the finish imparted to the fiber is probably the critical factor.

R. L. Patton, Cornell University, Ithaca, N. Y. Jour. Econ. Ent., October, 1945, Vol. 38, No. 5.

Buy MORE Victory Bonds

NEW

DU PONT RODENTICIDE AN

(ANTU)

AVAILABLE NOW

Extensive field tests confirm the effectiveness of Du Pont RODENTICIDE AN when used against the Brown or Norway rat, the predominating disease-carrying species. This rodenticide is being used by professional rodent-control operators with satisfactory results.

•

Du Pont RODENTICIDE AN has desirable odorless and tasteless characteristics. It is economical—lethal dose is usually less than 10 milligrams per kilogram of body weight. The lethal action is swift and certain.

•

This rodenticide is available *now* as a concentrated and unmodified powder for use in bait formulation.

•

Write today for detailed information on this outstanding new rodenticide. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

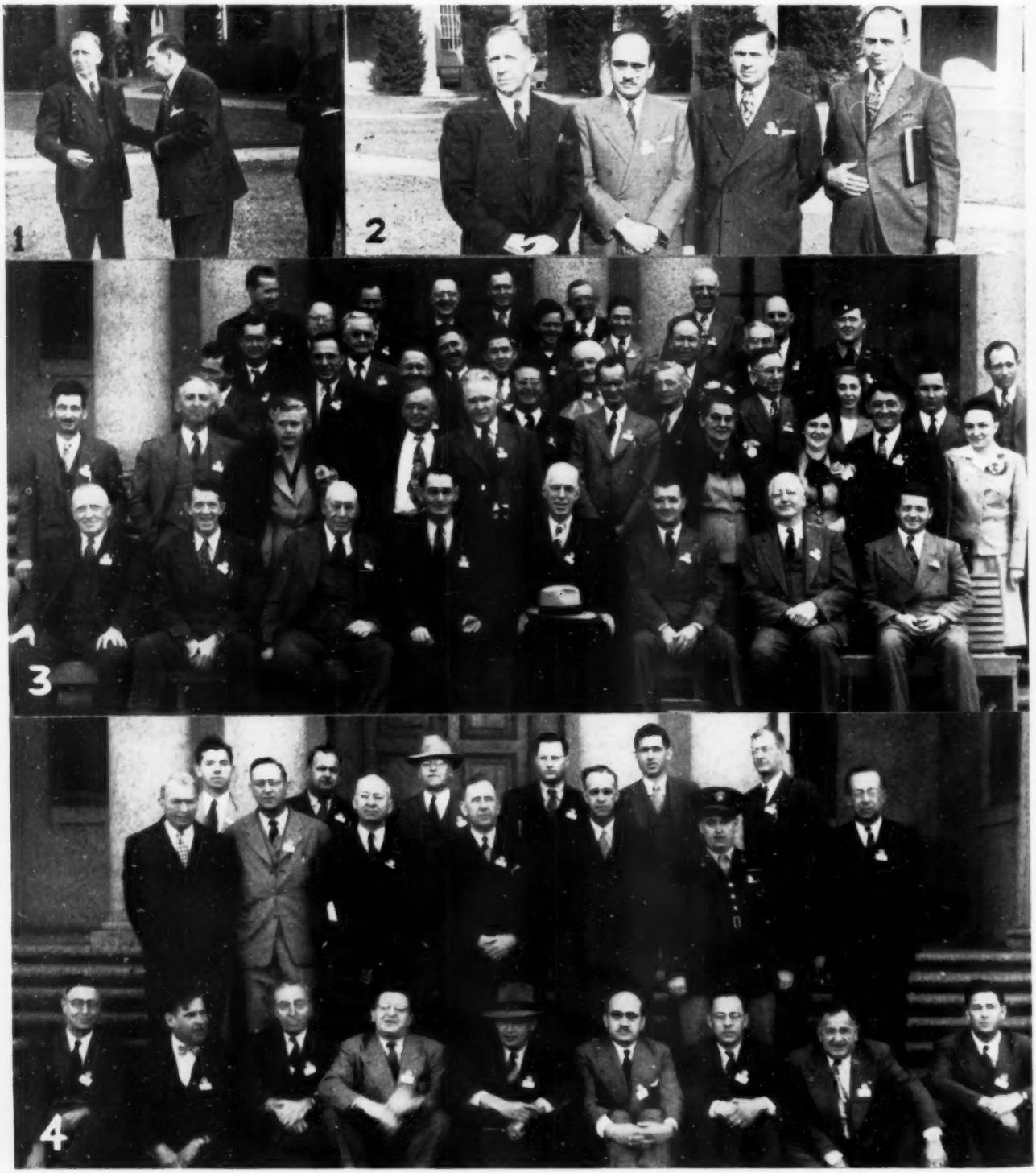
•

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

Personalities on Parade

Sixth Southern PCO's Conference, Louisiana State University, Baton Rouge, La., February 14-16, 1946.



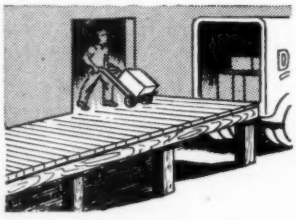
1—Dr. O. W. Rosewall having difficulty convincing "Bill" Buettner.

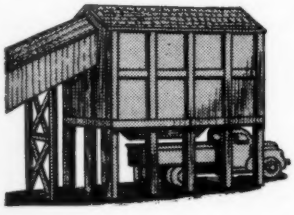
2—Dr. O. W. Rosewall, "Ted" Oser, "Bill" Buettner, L. S. "Bugs" Bridges.

3—Way Down "Texas" Group attending the Conference.

4—"Faculty."

NO JOB IS TOO TOUGH for TERRA TOX





Tackle any size of termite job with

TERRATOX

The control operator supplied with TERRATOX is prepared to handle successfully any scope of job—from homes to industrial plants. Above ground and below grade timbers and surrounding soil are effectively treated in large or small areas for termite control.

Effective, Economical and suited to local conditions . . .

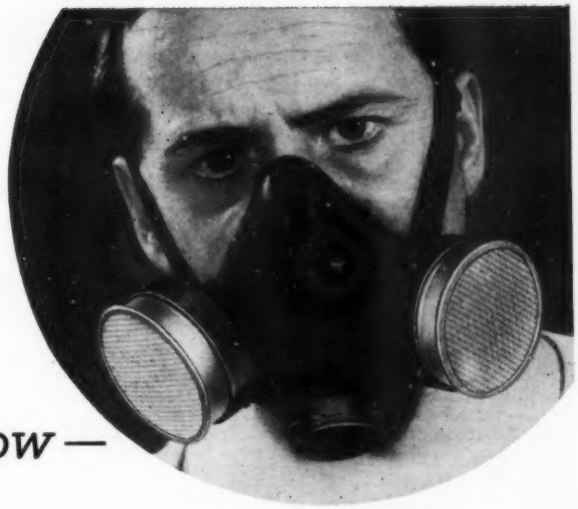
TERRATOX has the pentachlorophenol base recommended by the U. S. Department of Agriculture. It is tested and proved for its positive effectiveness and indefinitely long lasting power.

TERRATOX is highly concentrated. You don't pay for thinners, you add them upon use. This saves shipping cost and storage space, too.

Available in one and five gallon cans and in 13 and 55 gallon drums.

Send for the special informational bulletin "Wood Treating Chemicals"—complete with date on methods and solution.

WOOD TREATING Chemicals Co.
5137 Southwest Ave.
St. Louis 10, Mo.



now —

respiratory safety against DDT *in any form!*

the M·S·A
CHEMICAL CARTRIDGE RESPIRATOR
with special cartridge for DDT

With this specially-adapted M.S.A. Chemical Cartridge Respirator, the pest control operator is protected from inhaling DDT itself or the solvent or carrier—as oil spray, mist or vapor. The replaceable chemical cartridges, of unique design, prevent passage of DDT in solution as proved by exhaustive laboratory tests. The Respirator is comfortable, easy to clean and keep clean—write for descriptive details!

For protection against DDT when handled as *dust* only, use the standard M·S·A Comfo or Dustfoe Respirators with ALL-DUST filters.

MINE SAFETY APPLIANCES COMPANY
Braddock, Thomas and Meade Sts. • Pittsburgh 8, Pa.
District Representatives in Principal Cities
In Canada: MINE SAFETY APPLIANCES COMPANY OF CANADA, LTD.
TORONTO • MONTREAL • CALGARY • VANCOUVER • NEW GLASGOW, N. S.

Additional Patents Relating to Pest Control

By DR. R. C. ROARK.

2,388,393 (Nov. 6, 1945; appl. Sept. 9, 1942). INSECTICIDE. Hans J. Diem, Bradenton, Fla.—A liquid insecticide comprises an extract of Pycnothymus rigidus.

2,388,614 (Nov. 6, 1945; appl. May 5, 1942). DISINFECTANT COMPOSITIONS. James Emory Kirby and John Frank Lontz, Wilmington, Del.—E. I. duPont de Nemours & Company, Wilmington, Del.—A bactericidal composition comprises N-dodecylbetaine and decamethylenebis(dimethyldecylammonium bromide).

2,388,753 (Nov. 13, 1945; appl. Aug. 2, 1939). APPARATUS AND METHOD FOR SANITIZING. Walter L. Mallmann, East Lansing, and Clifford H. Kain and Richard J. Schaefer, Detroit, Mich.—Sanozone Corp., Detroit, Mich.—An apparatus for sanitizing with ozone and other disinfecting gases or liquids is described.

2,389,302 (Nov. 20, 1945; appl. Sept. 29, 1942). TREATMENT OF INSECT-DAMAGED WHEAT. Cyril Harry Evans, Cleethorpes, England.—Spillers Limited, London, England.—A process for counteracting the harmful effects of the presence in wheat of grain damaged by Hemiptera of the genera Aelia and Eurygaster, consists in adding to the wheat in a condition selected from the granular and milled conditions of the wheat an amount of sodium chlorite exceeding 1 gram per sack of 280 lbs.

2,389,427 (Nov. 20, 1945; appl. Feb. 16, 1945). INSECT REPELLENTS. Samuel I. Gertler, Washington, D. C.—Secretary of Agriculture.—The patentee claims a process of repelling insects comprising applying to the region from which the insects are to be repelled a composition containing N-sec-butylphthalimide as its essential active ingredient. This composition repels **Aedes aegypti** and **Anopheles quadrimaculatus.**

2,390,249 (Dec. 4, 1945; appl. Sept. 14, 1945). INSECT-REPELLENT COMPOSITION. Stanley A. Hall, Mount Rainier, Md., and Bernard V. Travis and Howard A. Jones.—People of the United States of America. A method of repelling insects comprises applying isopropyl cinnamate to the region from which the insects are to be repelled.

2,390,470 (Dec. 4, 1945; appl. Dec. 17, 1941). PREPARATION OF alpha, beta-DICHLOROPROPIONITRILE. John K. Sumner, Langhorne, Pa.—Rohm & Haas Company, Philadelphia, Pa.—A process for the production of alpha, beta-dichloropropionitrile comprises reacting anhydrous, oxygen-free chlorine with acrylonitrile in the liquid phase at temperatures of about 0° C. to about 100° C. in the presence of visible light and in the absence of oxygen and water. Dichloropropionitrile has been found to have insecticidal value.

2,390,597 (Dec. 11, 1945; appl. Dec. 5, 1942). INSECTICIDES. George H. Law and John H. Purse, South Charleston, W. Va.—Carbide and Carbon Chemicals Corp.—An insecticide composition essentially contains N-cyclopentenyl N-cyclohexyl amine.

2,390,686 (Dec. 11, 1945; appl. May 6, 1943). RODENT EXTERMINATOR. William C. Bishop, Vernon, Tex.—One-half to George W. Lisenbee, Vernon, Texas.

2,390,843 (Dec. 11, 1945; appl. Oct. 3, 1941). METHOD AND MACHINE FOR VAPORIZING INSECTICIDES AND OTHER LIQUIDS. William Edward McCauley, Champaign, Ill., and Carlos W. Veach, Riverside, Calif.—Board of Trustees of the University of Illinois, Urbana, Ill.—An insecticide solution is sprayed against a hot plate and the resulting vapor distributed by means of a fan.

2,390,848 (Dec. 11, 1945; appl. Dec. 31, 1943). RODENTICIDE. Curt P. Richter, Baltimore, Md.—United States of America, Secretary of War.—The patentee claims a rodenticide composition of 90% flour, 9% molasses and 1% N-(1-naphthyl)thiourea.

2,390,911 (Dec. 11, 1945; appl. Aug. 3, 1942). INSECTICIDE AND METHOD OF MAKING SAME. Thomas C. Allen and Herbert H. Harris, Madison, Wis.—Wisconsin Alumni Research Foundation, Madison, Wis.—A method of increasing the toxicity of sabadilla seed to houseflies over the natural toxicity thereof, consists in comminuting the seed and heating the comminuted seed in a solvent of kerosene to a temperature sufficiently above normal temperature and for a sufficient period of time to develop maximum toxicity.

2,391,490 (Dec. 25, 1945; appl. Sept. 16, 1943). PRODUCTION OF REFINED CYANOGEN CHLORIDE. Jack T. Thurston, Riverside, and Russel L. Sperry, Stanford, Conn.—American Cyanamid Company, New York, N. Y. The patentee claims a method of refining crude cyanogen chloride containing hydrogen chloride and chlorine which includes the steps of passing vapors of the crude cyanogen chloride through a bed of calcium carbonate over which water is flowing, then over a non-alkaline desiccant and thereafter passing the dry vapors over activated charcoal, cooling the charcoal to dissipate the exothermic heat of adsorption, condensing and recovering the thus purified cyanogen chloride.

2,391,890 (Jan. 1, 1946; appl. Aug. 28, 1944). FUMIGANT MIXTURES. Fred W. Fletcher and Eugene Kenaga, Midland, Mich.—The Dow Chemical Company, Midland, Mich.—A fumigant composition comprises a volatile liquid including a solution of from 2.5 to 20 per cent by volume of ethylene bromide in carbon tetrachloride.

2,392,067 (Jan. 1, 1946; appl. May 3, 1941). INSECTICIDES. Herbert Schotte, Berlin-Charlottenburg, and Robert Ebert, Berlin-Halensee, Germany.—Sherka Chemical Co., Inc., Bloomfield, N. J.—An insecticidal composition, comprises 1,8-dichloro-3,6-dinitrocarbazol, a wetting agent, and a filler.

2,392,345 (Jan. 8, 1946; appl. May 31, 1943). GARMENT BAG. Joseph Hirsch Vineberg, Ottawa, Ontario.

2,392,359 (Jan. 8, 1946; appl. Mar. 8, 1944). CARBOHYDRATE DERIVATIVES. Joseph N. Borglin, Wilmington, Del.—Hercules Powder Company, Wilmington, Del.—The patentee claims thiocyanoacyl esters of starch and of cellulose. The products prepared in accordance with this invention have been found useful for killing larvae, such as the common house fly maggot and moth larvae.

2,392,455 (Jan. 8, 1946; appl. June 9, 1941). INSECTICIDE. Charles Verne Bowen, Bethesda, Md., and Lloyd E. Smith, Washington, D. C.—Claude R. Wickard, Secretary of Agriculture of the United States of America.—An insecticidal composition of matter comprises 3-nitroacenophthene and a solvent carrier therefor.

2,392,733 (Jan. 8, 1946; appl. June 27, 1940). MOTHPROOFING. Avery H. Goddin, Newark, and Norman E. Searle, Wilmington, Del.—E. I. du Pont de Nemours & Company, Wilmington, Del.—A method of protecting textiles and like goods from attack by clothes moths, carpet beetles and their allies comprises impregnating the goods with 2,4,6-trichlorobenzyphenyl ether from solution in a volatile solvent.

2,393,716 (Jan. 29, 1946; appl. May 19, 1942). COMPOSITIONS CONTAINING ACTIVE CHLORINE. Earl W. Smith, Syracuse, N. Y.—The Solvay Process Company, New York, N. Y.—The patentee claims a new composition of matter containing active chlorine, a solid mixture containing Chloramine-B and mono-sodium citrate.

"TOX-EOL" for TERMITE CONTROL

TIME TESTED

TIME PROVED!

A large volume Termite Control Operator recently wrote us,

"Used your chemical since August, 1941, with an almost 100% efficiency . . . proud of results."

This is just one out of the many unsolicited letters we are constantly receiving proving the effectiveness of "TOX-EOL."

"TOX-EOL"

Toxic base is chlorinated phenol plus. Is economical and not unpleasant to use. Effective for both wood and soil poisoning. Present cost less than creosote. Shipped in a highly CONCENTRATED liquid saving transportation charges.

Send today for advertising and dealer co-operation plan.

CRE-O-TOX CHEMICAL COMPANY

Pioneers in the use of Chlorinated Phenols for termite control.

Now located in our new plant:
2670 BROAD **MEMPHIS 12, TENN.**

For the ideal base with DDT Solutions *specify* **PENN-DRAKE INSECTI-SOL**

Because Penn-Drake INSECTI-SOL stays odorless, and evaporates completely, it is the ideal base for use with DDT solutions or with DDT crystals in low concentrations, as well as with insecticides of other types. INSECTI-SOL is 100% volatile, floats longer and gives maximum penetration.

Use Penn-Drake INSECTI-SOL as the base for all insecticides—whether DDT or other types. Write today for full details.

Use Penn-Drake Insecti-sol for

1. MAXIMUM PENETRATION
2. COMPLETE EVAPORATION
3. LONGER FLOATING
4. NO ODOR

penn drake petroleum products

PENNSYLVANIA REFINING CO.
GENERAL OFFICES · BUTLER, PA.
Refineries at KARNS CITY and TITUSVILLE, PA.
BRANCHES: Cleveland, Ohio; Edgewater, N.J.

FAST and DEADLY ACTION

...against COCKROACHES!

LETHANE A-70 AND DDT

• Here's a new combination powder that gets rid of roaches *fast!* It's a powerful insecticidal team that works equally well on ants, bedbugs and silverfish.

Ask for powders based on the combination of LETHANE A-70 and Rohm & Haas DDT. Easily applied with bulb-type dusters or mechanical equipment. Write us for information and the name of your nearest supplier.

Only Rohm & Haas Makes LETHANE

LETHANE is a trade-mark, Reg. U. S. Pat. Off.

ANOTHER DEVELOPMENT OF ROHM & HAAS INSECTICIDE RESEARCH

ROHM & HAAS COMPANY
WASHINGTON SQUARE, PHILADELPHIA 5, PA.
BRANCH OFFICES: CHICAGO · KANSAS CITY, MISSOURI
OAKLAND & SOUTH GATE, CALIFORNIA
CANADIAN DISTRIBUTORS: P. W. SODEN & CO., LTD., MONTREAL & TORONTO

WHAT'S NEW IN PEST CONTROL-PERSONALS

A. D. BOSLEY COMPANY of Indianapolis, Indiana, has moved to their new office building, 3545 Sutherland Ave. It is understood that they have now one of the finest plants devoted to manufacturing of Insecticides. Congratulations and more success.

ROBERT M. BORG of Ossipee, N. H., writes: "We are the proud parents of a 9 lb. 8½ oz. boy, **ROBERT JAMES,** Robert after me, and James after Sally's dad. Sally named the baby! Sally and the baby are home now and both are doing very nicely. Robert James was born January 27 at 10:10 p.m." Mr. Borg, formerly very active in the U. S. Fish and Wildlife Service and for a time with the Dow Chemical Co., intends to open an office as a consulting fumigator and operator in New Hampshire, eventually branching out into the States of Maine, Vermont and Massachusetts.

Congratulations and well wishes to the Borgs on their new arrival and in their new venture!

SOLVAY OPENS NEW SOUTHWESTERN BRANCH

Col. S. O. Taylor Appointed Manager

Solvay Sales Corporation has announced the establishment of a new office at No. 847 M & M Building, Houston, Texas. This new office, which will cover the states of Texas, New Mexico and Arizona, will be in charge of Col. S. O. Taylor.

Col. Taylor is a veteran of both World War I and World War II having recently returned to Solvay after having served three years as Executive Officer at Patterson Field, Dayton, Ohio, as a member of the Air Corps. Prior to his latest entry in the Army, Col. Taylor was employed for a period of eleven years with Solvay Sales Corporation's St. Louis Branch.

Solvay Sales Corporation markets alkalies, calcium chloride and other chemical products manufactured by The Solvay Process Company.

H. M. ANDERSON resigned his position with A. D. Chapman & Co., Inc., Chicago, Ill., as of March 2. His new work will be along the lines of Cathodic Protection and Water Purification. Our best wishes to Mr. Anderson in his new endeavors.

DR. MORTIMER D. LEONARD, who for four years had charge of OPA insecticide price control, has left that agency. He is at 2480 16th St., N. W., Washington.

FASSIG JOINS HERCULES—Walter W. Fassig has joined the Naval Stores Department of Hercules Powder Company as entomologist in charge of the biological laboratory at the department's Brunswick, Ga., plant.

Activities of the biological laboratory, which evaluates insecticides, are being expanded. The variety of insect colonies used in testing sprays will be broadened to include several new species. Mr. Fassig will work under the direction of the chief chemist of the plant.

After receiving his B.S. and M.Sc. degrees from Ohio State University, Mr. Fassig became a member of the department of entomology, University of Delaware, in March, 1937. He remained there until October, 1941, when he entered the Army.

While in the Army, Mr. Fassig worked on special assignments for the sanitation corps. An overseas tour of duty included specimen work on mosquito control in New Guinea, Manila and Korea. When discharged in January of this year, he had been promoted to the rank of major, and was commanding officer of a malaria survey unit.

DR. LYLE D. GOODHUE, whose work on aerosol development while with the Bureau of Entomology and Plant Quarantine won the 1945 John Scott Award from Philadelphia, has resigned from BEPQ and joined the technical staff of Aerosols, Inc., Neodesha, Kansas.

LEMMON HEADS CALIFORNIA CHEMISTRY BUREAU—Allen B. Lemmon, who has been acting chief of the Bureau of Chemistry, California State Department of Agriculture, since the retirement of Dr. Alvin J. Cox last July 1, now is confirmed in the post, having ranked first in a State civil service examination.

Mr. Lemmon entered the State service in 1933 as an inspector of economic poisons and fertilizers. He received his A.B. degree from Leland Stanford University in 1930 and his engineering degree in 1932. His home is in North Sacramento.

Mrs. Lemmon was his Stanford classmate, Juanita White. They have three children.

ERADICO PRODUCTS CO. of Detroit, Michigan, pest control operators and manufacturers of household insecticides, announce their removal to their new factory and office at 684-90 E. Congress St. Congratulations and success.

BAR SALE OF A RAT POISON

Product Named "1080" Is Too Potent for Public Use.

St. Louis—Because it is so potent, "1080" the new rat poison developed for the United States Fish and Wildlife service, will be barred from general sale to the public, the Monsanto Chemical company said today.

The poison has no identifying odor or taste, a company spokesman said, and becomes a hazard in the hands of anyone other than an expert. One-fiftieth of an ounce could be fatal to a human, he said, and there is no known antidote.

The poison was so named because it was the one-thousand-and-eightieth product tested by the wild life service in a search for a potent rodenticide.

BRITISH FURNITURE FOR TROPICS—A new type of furniture which is unaffected by climatic conditions or attack by insects has been developed for export to eastern and tropical countries. The framework of chairs and tables is prefabricated from steel tubes, while seat and table tops are made from heat and insect-resistant plastics.

—*N. Y. Times.*

RAT BEATS HOT SEAT—San Jose, Calif., March 19 (AP)—A rat trap, complete with an electrocution chamber and an electric door, was demonstrated at a sectional meeting of the National Association of Sanitariums, Inc. A rat entered the tunnel, the door banged shut, and there was an audible electrical buzzing. A few seconds later the door opened and—out walked the rat.

DDT POWDER sold to the public, under a recent ruling of the health department of New Hampshire, must be colored, to guard against its being mistaken for flour.

Personalities on Parade

Before the Tenth Annual PCO Conference, Purdue University, Lafayette, Indiana, January 30, 1946

"Illustration courtesy of the Electro Auto-Lite Company."

New and Different . . .

P-C-H ROACH POWDER

NON-POISONOUS . . . LASTING TOXICITY

Kills cockroaches by contact. Acts quickly and gives lasting killing power after application. Non-poisonous to humans and warm-blooded animals. Made from piperonyl cyclophexenone, the new and highly toxic insecticide. Also contains pyrethrins which add to killing power.

FOR TERMITE CONTROL

DRY SODIUM ARSENITE: Soluble in water or use In dry form. Contains 75% Arsenious oxide

ATLAS "A": Concentrated sodium arsenite solution. One gallon equivalent to 5.33 pounds of Dry Sodium Arsenite.

Now available — write today for circular and complete information!

CHIPMAN CHEMICAL COMPANY
Dept. N., Bound Brook, N. Jersey

BENZENE HEXACHLORIDE, according to entomologists of the U.S.D.A., is seven times more effective against flies than DDT, and effective against many insects immune to DDT.

USE OF DDT—Indian Army medical authorities are testing the possibility of malaria control in their country by spraying DDT from airplanes, it is unofficially reported. Initial tests were made at Delhi, where large breeding areas make control on the ground difficult. Encouraging results have been obtained, so far.

RATS HERE FREE OF BUBONIC PLAGUE—None of the rats caught in an intensified rodent-trapping program in Seattle has had fleas carrying bubonic plague, Dr. Ragnar T. Westman, acting city health commissioner, said today.

Dr. Westman said Seattle's rat-control program has been praised by Col. W. E. Wayson, United States Public Health Service, who is in charge of the government's rat-control work on the Pacific Coast. Fears had been expressed that rats here might carry bubonic plague.

CLOSET WALLPAPER CONTAINING DDT TO BE MARKETED

DDT has been incorporated in a new type of ready-pasted cedar closet wallpaper by the Trimz Company, Inc., Chicago. This new product, which will be known as Trimz ready-pasted cedar closet wallpaper containing DDT insecticide, is the latest development from the laboratories of United Wallpaper, Inc., world's largest manufacturer of wallpaper, the parent company, and originator of ready-pasted wallpaper and similar products. It will be distributed nationally in March.

The DDT which in the past has been apparent as a white powder when sprayed or otherwise applied to wallpaper has been dyed to the correct color during the manufacture of this new wallpaper, and so incorporated into the product that it does not show and will not rub off.

Guaranteed effective for a year or more, the new wallpaper is similar in appearance to the cedar closet wallpaper which homemakers have been using for many years to line closets, bureau drawers and clothes chests.

TERMITES—An entomologist, according to the N. Y. Times, has disclosed that the troublesome termite suffers from mahogany-phobia and will not bite this tough wood. He therefore helpfully suggests that home owners restrict all the woodwork in their homes to solid mahogany.

FUMIGATION MISCELLANY

Bulletin calls attention to fumigator's first aid kit, answers some questions of interest to every fumigator, offers some pertinent fumigation safety suggestions.

American Cyanamid & Chemical Corp., 20 Rockefeller Plaza, New York City 20, N. Y. Bulletin No. 99.

RED TAG MEANS BAD GARBAGE CAN

Garbage containers adjudged insanitary by city health inspectors are to be marked by yellow and red stickers.

They will bear the following warning, according to Dr. John Burke, chief of the department of sanitation, who made the announcement:

"Notice: This garbage can is condemned. You are hereby notified to provide a watertight container, with suitable handles and a tightly fitting cover. The can shall be tightly covered at all times.

"Failure to comply with the provisions of this notice will necessitate prosecution under city ordinance No. 10685."

Periodic rechecks will show if the order has been followed.

—From Dayton (O.) News.

BIOLOGY and CONTROL of the AMERICAN DOG TICK, by Carroll N. Smith, Associate Entomologist, and Moses M. Cole and Harry K. Gouck, Assistant Entomologists, Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U.S.D.A., Washington, D.C. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D.C. Price 20 cents (in coin). Technical Bulletin No. 905, January 1946.

INSECTICIDE DISPENSER: Plans for effecting national distribution on its aerosol insecticide dispenser, known as the Westinghouse Bug Bomb, have been completed by the Westinghouse Electric Appliance Division, Mansfield, Ohio. Harry S. Mills will be manager of the insecticide department and R. E. Ditsler, merchandise manager.

DDT—DDT spraying of pastures or woodlands where dairy cattle graze may poison users of their milk, reports Drs. Horace S. Telford and James E. Guthrie of the research laboratories of Hess & Clark, Inc., of Ashland, Ohio. The two experimenters first fed toxic doses of DDT to nursing female rats. Typical symptoms of DDT poisoning developed, and shortly thereafter the same symptoms appeared in the suckling young. In another experiment the DDT was given to milch goats in heavy doses, and their milk given to adult rats. Again there was high mortality among the rats, though the goats survived. Female rats receiving the milk had their milk poisoned, so that their young died. The poisoned milk from the goats seemed to have no ill effect on nursing kids.

—N. Y. Times.

AEROSOL INSECTICIDE DISPENSERS—Revised Order 73 under 3 (e), effective Dec. 11, 1945, continues maximum prices for aerosol dispensers in 1-lb. sizes and provides that where the capacity of the dispenser is more than 1 lb. the price shall be determined at the same rate per pound net contents less 10%.

THE MONTH'S GAG:

FRANK SINATRA—"Back in the days when I was with Tommy Dorsey's band, I was known as Dorsey's Dramatic Tenor. I was dynamite."

JIMMY DURANTE—"Why?"

FRANK SINATRA—"DDT! I was deadly in those days."

DDT SOAP—DDT in dog soaps promises to eliminate the flea problem, according to G. A. Campbell, F. C. Hymes and T. F. West in Nature. The three experimenters, all connected with commercial firms, knew that DDT-treated clothing retains insect-banning powers even after several washings. So DDT was incorporated in ordinary household soap and used in washing twelve dogs, all of long-haired breeds and all infested either with fleas or lice. Not only were the vermin eradicated but the animals did not become infested after re-exposing. Only one of the dogs picked up a few fleas nine weeks after treatment.

UNEMPLOYED MICE—The New York City Health Department has 1,700 useless white mice eating their heads off at the anti-toxin laboratory in Otisville, N. Y., victims of technological progress, according to the N. Y. Herald-Tribune. The mice are the descendants of an original handful and were intended for tests on pneumonia serum. But the sulfa drugs came along, and while the mice multiplied furiously, the need for them diminished. A few months ago the males and females were placed in separate cages, so 1,700 would be the top figure, and the Department of Purchase will entertain bids for them tomorrow. They won't make good pets, by the way. They bite.

MOSQUITO REPELLENTS—Howard A. Jones and Bernard V. Travis of Orlando, Fla., received patent No. 2,396,012 on new mosquito repellents, according to the N. Y. Times. The patent is dedicated to the free use of the people of the United States.

Repeated laboratory experiments disclosed that certain organic acids, including undecylenic acid and n-capric acid, could be used with remarkable effectiveness when applied to clothing or to exposed parts of the body to keep mosquitoes away.

One-fourth teaspoonful of the repellent composition was applied to the forearm of a research chemist, who then exposed his arm from wrist to elbow to a horde of hungry mosquitoes. Two species of mosquito were used in the experiments—Ano-

GRADUATE ENTOMOLOGISTS

Large commercial pest control company requests services of graduate entomologists, 25-35 years old, for field work. Salary commensurate with applicant's requirements and ability.

GUARANTEED SANITATION, INC.

500 Fifth Ave. New York City 18

WIZO RAT GLUE BOARDS

Eliminate Use of Poison!
Require No Bait!

A practical and economical way to rid buildings of rodent pests! No hazards of poisoned bait . . . or of decomposition! Easy to prepare! Just place WIZO Rat Boards near rat hole or form a runway next to walls. Fasten boards to floor to prevent pulling away. Rodents are caught firmly the moment they step on the boards.

WIZO RAT GLUE can be obtained in quantities for preparing your own boards. Write for complete particulars.

ELKAY PRODUCTS CO.

323-27 West 16th St. New York, N. Y.

FOOLPROOF INSURANCE

Unintentional omissions in your policies may be the end result, unless your insurance program is set up by an insurance firm versed in the varying needs of the PCO.

In business since 1915, our firm has built up an extensive experience backlog of the PCO's over-all insurance requirements, stemming from an unprecedented volume of such insurance replacement. This experience is a guarantee your insurance will be expertly planned, ideally suited to your business needs.

Policies in all representative AMERICAN STOCK COMPANIES, with coverage for:

Public Liability — Workmen's Compensation
Auto Liability — Products Liability
Property Damage — Accident & Health
All Allied Lines

Also Life Insurance and All Forms of Employee Insurance Plans

MEMBER NATIONAL PEST CONTROL ASSOCIATION

Correspondence cordially invited. There is no obligation.

B. & D. A. WEISBURGER

1440 Broadway — New York City 18, N. Y.

KATFISH BRAND

TERMITE HOSE!

AMERICA'S FINEST FOR 16 YEARS

Guaranteed to Outwear and Outlast any Other Hose or Money Refunded

WHY BUY DATA

★ A 16-Year Proven Product
★ Built for the Job Exclusively
★ GUARANTEED with 43 Years Behind It

Write Today for Price and — FREE SAMPLE

Also Rock Wool Hose and Cyanide Hose

"The Rubber House of the Americas"

BROADWAY RUBBER MFG. CO.

529 East Broadway Dept. "P" Louisville, Ky.

Effective Protection for WOOD with PERMATOX "A"

Soil Poison and Wood Preservative

Control Attack of TERMITES, Lyctus Beetles, Decay and Dry Rot

PERMATOX "A" is easy to apply, economical to use and effective as a soil poison and wood preservative to control the attack of termites and Lyctus (Powderpost) beetles, decay and dry rot in lumber, posts, poles, plywood and other wood products.

Apply PERMATOX "A" (5% pentachlorphenol in suitable petroleum solvents) to all exposed wood surfaces by spraying, brushing or dipping.

As a soil poison to control attack of termites, apply PERMATOX "A" when the soil is dry and warm, using one gallon per five cubic feet of soil. The soil should be treated around the walls, pipes, foundations and steps to form an effective chemical barrier.

Write for Bulletin 45-T . . . "What to do about Termites" . . . sent free on request.

Wood honeycombed by termites. View showing inner tunneling beneath exterior surface, along the grain.

A. D. CHAPMAN & COMPANY, INC.

333 N. Michigan Ave., Dept. P. Chicago 1, Illinois
Atlanta Memphis New Orleans New York Portland
Los Angeles Houston

pheles quadrimaculatus and Aedes aegypti. The n-capric acid repellent prevented a bite by the former species for six hours and two minutes, and undecylenic acid kept the latter species away for two hours and thirty-eight minutes.

ECONOMIC POISONS BILL INTRODUCED IN HOUSE—The revised bill for regulation of the marketing of economic poisons and devices was introduced in the house March 1 by Representative John W. Flannagan of Virginia, chairman of the house committee on agriculture. The bill, H. R. 5645, is a substitute for the original bill, H. R. 4851, on which the committee held several days of hearings last month.

As introduced the legislation is understood to be generally satisfactory to the insecticide industry and to the chemical industry. None of the fundamentals of the original measure have been changed and the only revisions were in the interest of clarity and elimination of conflicting language. It has not been decided whether additional hearings will be held by the committee before it acts to report the bill to the house.

—Oil, Paint and Drug Reporter.

As a means of controlling disease within its borders, Japan has undertaken manufacture of DDT POWDER.

STANLEY'S PATENTED PIGEON-PROOFING

Economically, Permanently, Positively and Lawfully from any type of structure.

Stanley's Roofing & Building Service, Inc.

523 West 184th St. New York, N. Y.
Telephone: WAdsworth 7-3300-1

The MOTH LINE That's Sweeping The Country!

It's Wizo—for a sensational complete Moth Killer Line! Kills moths, eggs, larvae—*actually prevents moths!* 100% active ingredients! Moth Killers for every purpose—in Vaporizer and Crystal form. Quick, simple, effective! Protects Clothing, Furs, Woolens, Carpets, Rugs, Upholstery, etc. Attractively packaged—sells on sight! The Big Profit Moth Line sold by leading jobbers throughout the country!

Write for particulars today!

ELKAY PRODUCTS CO.
323-27 West 16th St. New York 11, N. Y.

LOCAL ORGANIZATION NEWS

N. E. Pest Control Group Meets Here

Importance of pending legislation before the Legislature to compel commercial users of insecticides and rodenticides to be examined and licensed was stressed yesterday by Bartlett W. Eldredge, Waltham, at the all-day meeting of the New England Pest Control Association at the Sheraton Hotel. About 60 attended.

Mr. Eldredge stressed that new compounds need specialized handling.

Joint Sponsorship

The current bill is being sponsored jointly by the New England Pest Control Association and the Massachusetts Department of Public Health.

The program began with a discussion of industrial problems, at the Sheraton, followed by a trip to the John Woodman Higgins Armory, where the guests toured the museum. Dinner at the Sheraton and a business meeting completed the conference.

Higgins Chief Speaker

John W. Higgins was chief speaked at the evening session, speaking on "Protective Armor Throughout the Ages." Mayor Sullivan, a guest of honor, spoke briefly. Lester M. West, president of New England Pest Control Association, presided. The meeting was arranged by Kenneth M. Cook and George R. Elliott, both of Worcester.

A report on the regional pest control conference at Purdue University was made by Leonard L. Goldman. George E. Ford reported on the conference at Massachusetts State College and C. A. Chafitz reported on the Montreal conference.

—Worcester Telegram, March 14, 1946.

New Jersey Pest Control Association

A regular meeting of the NJPCA was called to order by President David P. McAlindin.

The meeting was held at the association's new meeting quarters, Continental Ballroom, Newark, New Jersey.

The association's new banner, representing the colors, maroon and gold, was presented by John Medoff.

J. E. Sameth, chairman of the education committee outlined the program of the forthcoming courses on "Termite and Rodent Control" to be held at Rutgers College of Agriculture. The date of the course was set for March 25, 26, 27, 28.

Harry Stucker, who attended the 6th Annual Eastern PCO Conference at Massachusetts State College, made a report of the activities at this function.

David Weissburger and his associate were guests for the evening. They spoke on "Group Hospitalization and Insurance."

Present at the meeting were: David Weissburger, Abe. Charnack, W. J. Boyce, Harold Kutakoff, Joseph Geisman, Harry Stucker, Theodore Tarney, Harold Krauss, J. E. Sameth, Melvin Oachs, John Medoff, Mrs. Charnack, Mrs. J. E. Sameth, D. P. McAlindin, and a representative of the Connecticut General Life Insurance Co.

Submitted by Abe Charnack, Secy.

Northwest Pest Control Association Elects

The Northwest Pest Control Association held its regular annual meeting on February 15, 1946. The following officers were re-elected for the coming year:

H. V. Smith, President—Smith Exterminating Company.

H. N. Harmer, Vice-President—Rose Exterminator Company.

Leo Davis, Secy.-Treas.—Fumigation Engineering Corp.

Submitted by Leo Davis, Secy.

Central Oklahoma Pest Control Association

On January 24, 1946 there was organized in Oklahoma City the Central Oklahoma Pest Control Association. The officers who were elected were as follows:

President—Earl Howerton, Oklahoma Insecticide Service.

Vice-President—W. H. Williams, Williams Pest Control Co.

Secretary—D. H. Bedingfield, Getz Exterminators, Inc.

Treasurer—A. H. Shaw, American Termite Company.

A subsequent meeting was held on March 4th at which Virgil Laird of Stillwater, Oklahoma showed various films about insects and rodents.

Considerable study is being given to the problem of rodent control, as well as legislation, by this group.

The Northern California PCO Association

The Northern California PCO Association will hold their quarterly meeting at the Hotel Senator, Sacramento, April 27.

It will be more or less a get-together affair. Problems regarding the packing and labeling of economic poisons of California will be discussed. Some of the U. S. Parasitologists experiences in war-torn Europe will be related.

Ladies are invited to come and enjoy the special occasion scheduled for the evening.

NYPCA and PEA Discuss "Group Insurance Plan"

Members of the New York Pest Control Association and the Professional Exterminators Association, participating in the "Group Insurance Plan," met on Monday evening, March 18, in the offices of W. J. Parker, N. Y., to clarify ambiguities that may have arisen since the adoption of the plan. Representatives of the Connecticut General Life Insurance Company were on hand to answer questions.

APCA Holds Quarterly Conference

The largest crowd yet to attend a meeting of the Alabama Pest Control Association met in Montgomery on Saturday, March 9th, at the Whitley Hotel for its regular quarterly conference. It was not only the largest meeting to date, but was the best meeting

LET US FORMULATE YOUR DDT SPRAYS & POWDERS

NEW LOW PRICES

5% (RESIDUAL TYPE) DDT SPRAY

55 Gallon Drum.....75c per gallon

10% DDT POWDER

Ton Lots.....15c per lb.
100 Lb. Cartons.....17c per lb.

IMPROVED PYRANE

A Substitute for Pyrethrum Powder for making your

ROACH POWDER

200 Lb. Barrel.....25c per lb.

Bosley's Roach Powder

Containing

25% Pyrane — 50% Sodium Fluoride — 25% Talc

100 Lb. Drum.....22c per lb.

Terms: All prices F.O.B. Indianapolis, Indiana

A. D. BOSLEY COMPANY

INDIANAPOLIS 5, INDIANA

MICE-GLUE

GETS MICE LIKE FLYPAPER GETS FLIES

10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

BIRD-REPELLENT

Keeps Pigeons, Starlings and Other Birds from Buildings

10 lbs. $6.00 25 lbs. $13.50 100 lbs. $45.00

PHOSPHORUS-PASTE

For Rats, Mice and the Large Brown and Black Roaches

10 lbs. $4.25 25 lbs. $9.00 100 lbs. $32.50

PEST CONTROL CHEMICALS CO.

324 Broadway Write for Details BUFFALO, N. Y.

GREATER *Kills* with CERTOX

REG. U. S. PAT. OFF.

Rodent Seed, Ant Jelly, Arsenic, Carbolic, Pyrethrum, Cresylic, Red Squill, Derris Powder, and other effective chemicals that do a thorough job for the Pest Controller. The quality of CERTOX products remains unaffected by the national emergency. Prices, too, are near normal.

YOUR GUARANTEE:

All CERTOX products are manufactured according to exacting specifications under personal supervision of I. H. LUTTAN, B. S. A., Entomologist.

SPECIAL CONTRACT PRICES Available to Cover your Annual Needs.

YORK CHEMICAL CO.

Suppliers of Complete Exterminating Chemicals.

424 West 18th Street, New York, N.Y.

5 YEAR GUARANTEED Mothproofing Liquid . . .

Odorless . . . Will not Spot or Stain

Popular appeal with fast turnover! mothproof clothing, furniture, rugs, in apartment hotel or home without inconvenience! Dry cleaning does not alter its effectiveness! Order your supply in package or bulk today.

2 SURE RAT KILLERS

PER-MO RATS-BITS

ready to use— made with Fortified Red Squill

Kills rats, mice and moles; safe to use! Popular seller.

Packed in 3 oz., 16 oz., and in bulk.

PER-MO RAT AND MICE LIQUID

Use as Drink or Mix with Bait

Just mix four parts of water to one part of concentrate and it's death to rats and mice— it's so economical to use.

16 oz. bottle supplied to you, postage prepaid, $1.00.

Order yours now! Available in package or bulk.

PER-MO ALSO MANUFACTURES GUARANTEED FLAMEPROOF LIQUID . . . AND REFRIGERATOR DEODORANT BAGS.

PER-MO PRODUCTS COMPANY

Original Makers of PER MO Mothproof Liquid

3604 Woodland Kansas City 3, Mo.

PER-MO PRODUCTS Will Be Packed Under Private Label. . . . Full Particulars and Prices on First Letter.

"See our booth No. 26 at the National Sanitary Supply Convention and Merchandise Display, Morrison Hotel, Chicago, May 26, 27, 28 and 29."

in every respect. An innovation was recorded in the termite division by presenting a symposium instead of the usual speech by one man covering all phases of termite control. The symposium was divided into three parts with three separate speakers, each delivering a short talk on (1) Construction Phases (2) Post-Treatment Servicing of Jobs and (3) Chemical Developments. Following each talk questions were called for, bringing the entire group into the discussion.

Ted Oser, National Pest Control Association President, spoke interestingly on the Conference's official theme "What Direction Shall We Take" and also entered into the legislative discussion which was led by B. P. Livingston of the State Department of Health.

Professor F. E. Guyton of the Department of Zoology-Entomology at Alabama Polytechnic Institute discussed household insects, with particular reference to DDT and practical experiments he has undertaken with this chemical.

The United States Public Health Service sent one of its instructors, Captain Gearhart, who spoke on the biology of rodents. His talk was accompanied by illustrated slides.

After the luncheon interlude the meeting reconvened to wind up some unfinished business of the morning agenda.

Mobile was voted the next meeting city. Semi-annual, all-day meetings were also voted to substitute for the quarterly half-day meetings previously held.

Mr. W. C. Bentley, Secretary of the State Association, arranged to have a picture made of the assemblage and this will be published in the Montgomery daily papers. The meeting was presided over by A. S. Krawcheck.

University of Wisconsin Holds First Pest Control Operators' Conference

The Department of Economic Entomology of the University of Wisconsin under the Chairmanship of Professor C. L. Fluke were hosts to the Wisconsin Pest Control Industry on Saturday, February 23rd at the Soil Building of the College of Agriculture on the campus of the University at Madison, Wisconsin.

Over sixty Pest Control Operators, State and Municipal Health Officials and members of the Department of Economic Entomology enjoyed the splendid program which follows:

Saturday Morning
February 23
206 King Hall

Chairman—
C. L. Fluke—Dept. Econ. Entomology

9:00 A.M.—Registration, 206 King Hall

9:30 A.M.—Views of a State Food Sanitation Official. — R. R. Crosby, Wis. State Dept. of Agriculture.
What does the housewife expect of the Pest Control Operator?—Miss Gladys Meloche, Extension Specialist in Home Economics.
Methyl Bromide as a commercial fumigant.—F. W. Fletcher —Dow Chemical Co.
DDT and other new insecticides.—E. H. Fisher, Extension Specialist in Economic Entomology.

12:30 P.M.—Luncheon—Short Course Dining Room.

Saturday Afternoon

Chairman—
E. H. Fisher—Dept. Econ. Entomology.

1:30 P.M.—Rodent control.—G. C. Oderkirk, U.S.D.A. Fish and Wildlife Service.
Spraying and Dusting Equipment. — Representative from the Hudson Mfg. Co.
Some entomological considerations. — C. L. Fluke. — Dept. Econ. Ent.
Summary and suggestions for next year.

Prof. C. L. Fluke and Dr. E. H. Fisher, Extension Specialist in Economic Entomology are to be congratulated on arranging this fine program. All of the PCO's in attendance were very enthusiastic in their praise of the meeting which has every indication of being repeated next year and with the possibility of being expanded into a two-day meeting.

After the University program, the Wisconsin owner-operators held a meeting that resulted in the formation of the Wisconsin Pest Control Association with the following officers and directors:

President—Harvey W. Klein, Klein Pest Control, Milwaukee, Wis.

Vice-President—Howard E. Johnson, Owl Exterminator Co., Racine, Wis.

Secy.-Treas.—L. B. Kelly, Solvit Chemical Co., Madison, Wis.

Directors—Miss Vinola Seaver, Seaver Laboratories, Beloit, Wis.; Henry Turrie, Wil-Kil, Inc., Milwaukee, Wis.; J. H. O'Leary, J. H. O'Leary & Co., Milwaukee, Wis.

The officers will meet sometime in April to draw up by-laws for the new organization and plan a program for the coming year.

Submitted by Harvey W. Klein.

New England Pest Control Association

The first "away from Boston" meeting of the NEPCA was held March 13th, 1946 in the Hotel Sheraton, Worcester, with more than fifty attending.

The group visited the famous Higgins Armory of the Worcester Pressed Steel Company in the afternoon and saw the collection of ancient and modern displays of iron and steel craftsmanship. The outstanding feature of the museum is the room which houses the collection of medieval armor.

Following the dinner the group was welcomed to Worcester by Mayor Charles F. Sullivan who is also a member of the State Legislature. He advised on procedure in enacting legislation.

John W. Higgins, president of the Worcester Pressed Steel Company, delivered the principal address. He suggested that every industry should maintain a public display of its products or services.

A delegation of four were on hand from Mass. State College. Prof. A. I. Bourne reported on the Student Loan and Research Funds. Prof. Harvey Sweetman outlined the four year course in Pest Control shortly to be offered by Mass. State and Professors William Becker and Frank Shaw told of the short course on "out-of-doors" Pest Control to be given at the college April 1 thru 6.

Tom Mahon and Dave Weisburger were present and told National Association highlights.

Ralph A. Urbano, Portland Exterminating Co., Portland, Maine and Frank B. Hines, Ace Exterminating Company, Salem, Mass., were welcomed into membership.

Reports on three of the Regional Conferences, Purdue, Amherst and Montreal were given by Leonard Goldman, George Ford and "Sid" Chafe, respectively.

"Andy" Anderson extended an invitation to the group to attend the meeting of the Connecticut Pest Control Association in Hartford, April 22.

Lester W. West, president, conducted the meeting.

Those attending NEPCA meeting were:
Charles F. Sullivan, Mayor, Worcester.
F. E. Bohman, Birchard System, Hartford.
A. N. Anderson, Berg Ext. Co., Hartford.
David A. Weisburger, B. & D. A. Weisburger, New York.
Mark Weintraub, Astor Ext., Boston.
Morris Schwartz, State Ext., Boston.
J. Newman, Newman Chemical Co., Holyoke.
C. A. Chafe, C. A. Chafe Co., Quincy.
Charles Houghton, Safety Fumigant Co., Boston.
Bartlett W. Eldredge, Waltham Chemical Co., Waltham.
George E. Ford, Griggs & Browne Co., Worcester.
Roland H. Bean, Griggs & Browne Co., Worcester.
Herbert Yarborough, Griggs & Browne Co., Providence.
Sidney Heald, Griggs & Browne Co., Providence.
Marie R. Butrym, Hansford Co., Worcester.
Clifford J. Butrym, Hansford Co., Worcester.
George W. Small, Hansford Co., Worcester.
Louis J. Riedl, Health Dept., Worcester.
Ralph A. Urbano, Portland Ext., Portland, Maine.
Lionel J. Delisle, Abalene Ext. Co., Pittsfield.
A. McAnulty, A.A.A. Exterminators, Boston.
George Bergrin, Economic Ext. Service, Dorchester.
Frank D. Kinney, Ransford Co., Worcester.
Peter DeSilva, Bay State Pest Control, Lawrence.
R. H. J. Pelletier, Ideal Spray Co., Lynnfield.
F. A. Beecher, Milford Products Co., Milford, N. H.
Ernest C. Stewart, Milford Products Co., Milford, N. H.
George R. Elliott, Ransford Co., Worcester.
Leonard N. Goldman, N. E. Pest Control, Providence.
Mrs. L. N. Goldman, N. E. Pest Control, Providence.
Arthur I. Bourne, Mass. State College, Amherst.
Frank R. Shaw, Mass. State College, Amherst.
William B. Becker, Mass. State College, Amherst.
Harvey L. Sweetman, Mass. State College, Amherst.
Roland M. Cook, Ransford Co., Worcester.
Thomas H. Mahon, NPCA, Brooklyn.
Aaron Kaplan, N. E. Ext. & Fum. Co., Lowell.
A. Bain, N. E. Ext. & Fum. Co., Lowell.
Joseph Messina, Cambridge Ext., Cambridge
W. D. Starbird, Puritan Specialty Co., Cambridge.
Thomas A. Sheehan, T. A. Sheehan Co., Boston.
Grace E. Dyar, Rose Exterminator, Hartford.
George W. Dyar, Rose Exterminator, Hartford.
Hart Harris, Jr., S. B. Penick & Co., New York.
George A. Lay, U. S. D. Interior, Boston.
John W. Higgins, Wor. Pressed Steel Co., Worcester.
H. Sidney Vaughan, Wor. Ct. Ext. Ser., Worcester.
Dr. James O. Wails, City Health Dept., Worcester.
Lester M. West, Rose Exterminator, Boston.
J. M. Carbonara, Hercules Powder Co., Boston.
Kenneth N. Cook, Ransford Co., Worcester.
Charles Scott, U. S. Fish & Wildlife Ser., Farmingham.

Submitted by Kenneth N. Cook, Secy.

PHOSPHOROUS PASTE

FOR ROACHES and RATS

SINCE 1874

J-O Phosphorous Paste is so compounded as to eliminate the hazard of fire and possesses advantageous qualities peculiar to itself. A properly made **Phosphorous Paste** such as **J-O** is absolutely safe to use. It cannot burn or set fire to other substances.

Phosphorous, however, remains basic in the compound because it is the most toxic chemical used in pest exterminating, being more toxic than arsenic, strychnine or thalium. Approximately one-tenth of a grain will kill a rat. Phosphorous is a slow poison, taking from 6 to 18 hours to kill. Due to its slow but positive action, the rat succumbs to this poison. He becomes very uncomfortable and, seeking fresh air and water, in most cases, leaves the premises and dies in the open.

For all species of roaches, this product is **UNEXCELLED.**

JOHN OPITZ, INC.

50-14 39th Street Long Island City 4, N. Y.

Manufacturers of Exterminating Products Since 1874

A.F.C. QUALITY PRODUCTS SAVE MANPOWER

Super Fluorex V, powerful insecticide powder

Sodium Fluoride

Poison Seeds

Pyrofine, insecticide concentrate

Bedbug Concentrate and Spray

Pyrethrum B. G. Powder Insecticide

Roach Powder

Sterilan, mothproofing powder

Carbolic Acid, Cresylic Acid, Borax, Mirbane

Orthodichlorobenzene

FOR EFFECTIVE RAT CONTROL

Barium Carbonate, Rumetan, Phosphorus Paste,

Arsenic, Fortified Red Squill Extract and Powder

Write for particulars—no obligation.

AMERICAN FLUORIDE CORPORATION

151 WEST 19th STREET NEW YORK 11, N. Y.

The BEST time to STOP termites is before they START.

Plan termites OUT of your new homes at time of construction.

Articles about The Hill Termite Control System for new construction have appeared in several national publications, including The American Builder, Building Supply News, Practical Builder, Southern Lumberman, Pests, and others.

The Hill Systems was exhibited at the Natl. Assn. of Home Builders convention, Chicago, more than 6,000 home builders attending.

Call on members of The Natl. Assn. of Home Builders in your city. They are large potential buyers.

There is now a very definite trend towards termite prevention instead of cure.

The Hill System is sold only to established termite control operators to be installed and serviced by the

Hill Termite Control Systems

W. B. HILL, Patentee. MEMPHIS, TENN.

Write For Descriptive Folder

INDALONE

INSECT REPELLENT

● The general interest in protection against disease-bearing and pest insects by repellents has been tremendously stimulated by the effective use of such materials by the Armed Forces. Everyone anticipates broader usage by the public for comfort and by the Public Health authorities for disease prevention.

Several thousand chemicals were studied at Orlando individually and in various combinations, and it is somewhat extraordinary that only a very few of these combined reasonable effectiveness with freedom from toxicological hazards or irritation.

Among these few, INDALONE was and is one of the leaders. It combines general effectiveness with specific and almost unique repellency to most types of gnats and biting flies. The record justifies the recommendation that INDALONE should be a substantial part of any insect repellent for which general effectiveness is to be claimed.

D&O

Dodge & Olcott, Inc.

INSECTICIDE DIVISION

60 East 42nd Street, New York 17, N. Y.

General Offices: 180 Varick St., New York 14, N. Y.

BOSTON • CHICAGO • PHILADELPHIA • ST. LOUIS • LOS ANGELES

Plant and Laboratories . . . Bayonne, N. J.

--BOOKS--

Broaden Your Knowledge—Increase Your Proficiency—Help You in Your Business

Unbidden House Guests

By DR. HUGO HARTNACK

The volume discusses about 2,000 house guests. It consists of 4 parts:

I. General Part: What are housepests today? Borderlines of Housepest field. Climate of the House. Housepests worldwide. Influence of the house on the housepest. Spoorology (Diagnostic) of Housepests. Damage by housepests (54 pages of pictures). Pests and Wastes. Fighting housepests outdoors. Exterminating methods. Formulae. Pages: 238.

II. Plants as Housepests. Bacteria, Molds which live in the house. Timber rot, fungus. What plants do to housepests and what housepests do to plants and plant products. Pages: 62.

III. Lower Animals. Protozoa, worms, snails, millepedes, spiders, mites, many others, as far as they are housepests. Pages: 112.

V. Backboned Animals. Chordata, coldblooded and warmblooded. Rodents, rats and mice take 56 pages. Formulae, Index. Pages: 148.

Price $12.00, plus 25c postage

The New 1945

Chemical Formulary—Vol. VII

By EDITOR-IN-CHIEF, H. BENNETT

Price $6.00 plus 15c postage

Volume VII of "The Chemical Formulary" includes thousands of the best and most practical formulae, compiled by authorities and experts in each field of industry. Each formula is new, and different from those in previous volumes.

Formulas for pest controls are extensive, and are the results of the most recent research. They include general and agricultural insecticides, parasiticides, larvicides, vermin exterminators, cattle grub control, Ant poison, mothproofing emulsions, fly control spray, Japanese beetle larvae control, lawn grub control, roach powder, silver fish poison, hide and skin beetle control, insect repellents, horticultural sprays, and Rotenone-Derris substitutes.

This valuable book describes and explains the latest commercial methods and processes. It will bring you valuable data and ideas that would otherwise be accessible only after consulting dozens of other books.

Emulsion Technology

A SYMPOSIUM

Price $5.00 plus 15c postage

A timely and practical book which discusses the new developments in emulsions and the outstanding role they are playing in industry. Much valuable data, concerning the equipment and techniques used in the manufacture of emulsions, are included.

CONTENTS: Mechanism of Emulsification; Fundamental Principles of Practical Emulsion Manufacture; Use of Highly Dispersed Emulsions in the Treatment of Toxaemic Conditions; Emulsions in the Patent Literature; Industrial Emulsion Formulation; Design of Emulsifying Machines; Effect of the Mode of Preparation on the Dispersion of Soap-Stabilized Emulsions; Problems Connected with the Preparation and Application of Emulsions Used in Agricultural Spraying; Observations on a Typical Food Emulsion; Emulsions and Emulsification in the Wool Textile Industry; Stability of Emulsions in Thin Films; Emulsion Paints; Emulsions in the Leather Industry; Rubber Latex; Physical Properties of Dispersions of Asphaltic Bitumen; Index.

Substitutes

By H. BENNETT

Price $4.00 plus 15c postage

A handbook of substitutes and alternatives for chemicals, fibres, metals and other commercial products including a plan for choosing proper substitutes. This book is the result of the author's wide knowledge of substitutes and alternatives for numerous products in diverse industrial fields.

CONTENTS: Substitute Requirements; Formulation; Proportions; Methods of Manufacture; Costs; Use of the Finished Product; Testing; List of Substitutes and Alternatives.

"How to Know the Insects"

A very valuable book for every pest control operator. This book, with its 140 pages and more than 250 careful drawings, is an excellent reference book for P.C.O.'s as well as for experienced entomologists.

Price for spiral binding.....$1.50 plus 15c postage

Price for cloth binding..... 2.50 plus 15c postage

Spray Chemicals and Application Equipment

The new book "Spray Chemicals and Application Equipment" is the result of six years research and collection of data by Wayne B. Fisher, B.S.A., Purdue University, chemical sales representative, and commercial horticulturist, cooperating with Dr. J. A. McClintock, Professor of Horticulture, Purdue University (co-author).

The book "Spray Chemicals and Application Equipment" is divided into two parts. Part one gives the interesting historical background of many chemicals and detailed discussions and photographs showing how they are manufactured. In addition, much discussion is devoted to methods of using spray chemicals, to insects and diseases controlled by the specific chemicals, and to methods of improving present day pest control practices.

Part two is a complete discussion describing almost every type of sprayer and duster available to the public for use in applying spray chemicals. About 300 illustrations are included in this section, and all types of equipment is shown ranging from the simplest atomizer sprayer to the largest commercial sprayers and airplane dusting equipment.

Price $4.00 plus 15c postage
Foreign $5.00 plus 35c postage

Practical Emulsions

By H. BENNETT

Price $5.00 plus 15c postage

An authoritative handbook which concentrates upon the more practical side of manufacturing, using and evaluating emulsions for industrial use and commercial distribution.

CONTENTS: Emulsifying Agents; Types of Emulsions and Foams; Methods; Formulation, Equipment; Stability; General Technical Emulsions; Dispersing Agents and Wetting Agents; List of Emulsions; List of Demulsifying and Defoaming Agents; Agricultural Spray Emulsions; Cutting Oils, Soluble Oils, Miscible Oils; Emulsifying Agents; Bituminous Emulsions; Cleaners and Soaps; Cosmetic and Drug Emulsions; Defoaming Agents; Food Emulsions; Gasoline Emulsions; Lacquer Emulsions; Leather Treatment Emulsions; Lubricant Emulsions; Medicinal Emulsions; Paint Emulsions; Paper Processing Emulsions; Polish Emulsions; Resin and Rubber Emulsions; Textile Emulsions; Miscellaneous; Dispersions.

Practical Tree Surgery

By MILLARD F. BLAIR

An authoritative manual indispensable for Spray Operators and Tree Surgeons. It gives valuable information pertaining to the association between trees, fungi, and insects; and discusses the means employable in obviating some of the most serious injuries to them. Contains 89 excellent illustrations and line drawings.

Cloth binding .....$4.00 plus 15c postage
Special binding ..... 5.00 plus 15c postage

Insect Enemies of Shade Trees

By GLENN W. HERRICK

This book discusses primarily the problem of preservation of shade trees from insect pests also describing accepted methods of fertilizing shade trees. It is intended for pest control operators engaged in the business of treating and caring for shade trees, and for all others interested in preserving shade trees. The book discusses in detail all the important insect enemies of shade trees east of the Rocky Mountains, and most of those on the Pacific coast. The book is illustrated with 350 photographs and drawings. Contains 417 pages. **Price, $5.00 plus 15c postage.**

202 Common Household Pests of North America

BY DR. HUGO HARTNACK

A 320 page book dealing with 202 common household pests of North America and showing about 400 illustrations.

The book contains valuable information. It not only deals with all common and less common household pests, but also with rodents, pigeons, sparrows, spiders, centipedes and mites. All are arranged in a distinct systematic order which makes it easier for one to know the relationship of each pest.

A book that should be in every PCO library.

Price $5.00 plus 15c postage

The Chemistry of Synthetic Substances

By EMIL DREHER

"A brilliant summation of the latest research in the chemistry of synthetic substances. We recommend this book highly for its completeness. It will satisfy those who have waited for a thoroughly competent dissertation in the field."

Price $3.00 plus 15c postage.

The World of Insects

By CARL D. DUNCAN
Professor of Entomology and Botany
and GAYLE PICKWELL
Professor of Zoology
SAN JOSE STATE COLLEGE

In this new book the authors give a general view of a vast and fascinating world.

Comparatively brief and nontechnical, the book reviews the many fields upon which the insect impinges, discussing such topics as insect structures, how insects grow up, insect food and feeding habits, insect food-getting devices, how insects reproduce themselves, how insects get air, how insects move, how insects are protected, insect voices, insect fitness, insect orders, social life among the insects, the value of insects, injurious insects and their control, where to look for insects, rearing insects, and how to collect and preserve insects.

One of the outstanding features of the book is the collection of 194 unusual illustrations, including many striking photographs original with the authors.

393 Pages, 6x9, Illustrated.....$3.50 plus 15c postage

Applied Entomology

By H. T. FERNALD and HAROLD H. SHEPARD

Fourth edition, 400 pages, 6x9, 383 illustrations. Quickly gives the main facts you want about: Silverfish, firebrat, termites, roaches, grasshoppers, earwigs, booklice, onion thrips, flower thrips, squash bugs, cotton strainer, bedbugs, 17-year locusts, leafhoppers, whiteflies, scale insects, mealybugs, borers, June bugs, Japanese beetles, potato beetles, asparagus beetles, weevils, clothes moths, fruit moths, cotton leaf worm, army worms, cutworms, tomato worms, mosquitoes, midges, horseflies, maggots, house flies, fleas, wasps, ants, gall insects.

Price $3.50 plus 15c postage

Termites and Termite Control

An indexed reference book produced by the University of California Termites Investigation Committee of engineers, scientists, and business men in six years' collaboration.

Contains the latest researches in facts on termites, the latest practical methods for exterminators, builders and architects. Contains 795 pages, including index; profusely illustrated.

Price (the new edition). Cloth Bound.....$5.00
Plus 15c postage.

The Knack of Selling Yourself

The "Knack of Selling Yourself" is just off the press. It is a good book for every P.C.O. to have in his library, for it deals with ideas and methods of selling oneself to the public. Every P.C.O. has this problem and on the successful solution of this problem depends the success of his business. This book definitely aids in the solving of this difficulty, contains 234 pages and is full of new ideas. Order from PESTS.

The cost is $3.00 plus 15c postage

Insect Pests

By WM. CLUNIE HARVEY and HARRY HILL

Price $4.25 plus 15c postage

The extermination of vermin is a skilled proceeding requiring the employment of scientific methods and of persons possessing technical knowledge. This authoritative book will prove of definite and practical value for all who are interested in the control of insect pests and in the prevention of disease.

CONTENTS: General Outlines of Insect Control: The Bed-Bug; The Flea; The Louse; Other Insect Pests; Building Construction and Infestation; Gaseous Fumigants; Other Specifics; The Technique of Fumigation; Insect Control and Educational Measures; Legislative Control; Human Toxicology; Disinfestation of Foodstuffs; Disinfestation of Ships; Forms and Records; Index.

ORDER FROM PESTS, 1200 OAK STREET, KANSAS CITY, MO.

The Entomologists' Joke-Book

There are so many new faces in our membership that we felt it timely to refer to the fact that there may still be procured copies of this splendid book of humorous writings and comments . . . unwittingly written . . . of an otherwise highly important science. The preparation of this book was done by Professor J. J. Davis, who has carefully compiled and selected much interesting material. This book may be purchased for $1.00 plus 10 cents in stamps to cover mailing postage. No PCO should be without this book in his library. Also order now before you forget—very simple to enclose a $1.00 bill and 10c in stamps.

This will make an excellent gift to PCO's in service and others.

Order through PESTS, 1200 Oak Street, Kansas City 6, Mo.

Houchin's Insect Powder Dusters

Made of Heavy Bright Durable Metal

Capacity 2 oz. Powder

Buy - - - V Bonds

No. 999 "Cyclone"

Thos. W. Houchin Corp.
87-101 Ferry St.
Jersey City 7, N. J.

A MIRACLE COME TRUE!

MICE-KIL-R NON-POISONOUS

MICE BAIT

NOTHING EVER LIKE IT BEFORE!

KILLS MICE ONLY . . . NOT FOR RATS!

READY TO SELL AND USE • DRY FOOD FORM

A Revolutionary Development that WILL AMAZE EXTERMINATORS EVERYWHERE! A NON-POISONOUS BLEND that entices MICE TO THEIR DOOM where other baits have so miserably failed!

ADD MICE-KIL-R to YOUR LINE! Sell or Use It UNDER YOUR OWN NAME—as you like. But—be the first to CASH IN BIG on the tremendous fields of untouched PROFITS this Sensational Discovery (Never-before-thought-possible) NOW BRINGS!

• • •

FOR RATS . . . USE THE KING OF RED SQUILL BAITS

RAT-KIL-R

THE BIG RAT BAIT MONEY MAKER!

USED AND SOLD BY EXTERMINATORS THROUGHOUT U. S. A.

•

MAIL POST CARD for SAMPLES and PRICES OF BOTH TODAY!

•

AMERICAN WORLD CHEMICAL CO.
411 North 10th St. St. Louis, Mo.

•

These Products Will Also Make You Money

- FLY-KIL CONCENTRATE
- ROACH-KIL CONCENTRATE
- INDUSTRIAL DISINFECTANT
- TERMITE-KIL CONCENTRATE
- INSEC-GAS FUMIGANT
- SAF-UZE ROACH POWDER

PEST CONTROL OPERATORS

Here is a product you should know for use in your work and re-sale

LENZ RED SQUILL RAT PASTE

It is time tested and a big repeater. Has that greasy smell and taste that rats like so well. Can be used in a great variety of ways. It makes a bait rats WILL take regardless of what food they have access to. Sticks tight to any type of bait.

OPERATOR'S KIT SIZE
24 oz. can $2.17 each good for 600 baits.

Two sizes for re-sale with display cards
6—⅛th oz. can $1.00
3 ounce jar $0.50
Doz. carton $7.00 Two doz. carton $7.20

Check with order prepaid.

Better prices in larger lots.

Can be had unlabeled at lower prices if you wish to affix your own labels.

LENZ LABORATORY
SYCAMORE, ILLINOIS

SOLVAY PURE PARA-DICHLOROBENZENE is one of the surest ways to eliminate moths. It is offered for use in crystal form (No. 1, 6 and 9) or for compressing into blocks.

Refer your production problems to the SOLVAY Technical Staff. Large quantities are being diverted to national health needs. But we will make our deliveries as soon as possible.

SOLVAY
PARA-DICHLOROBENZENE

SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 Rector Street New York 6, N. Y.

BOOKS

Please remit check with order as this will save additional expense and time.

A list of new books includes:

People
Price $2.50 plus 15c postage

Chemistry of Insecticides and Fungicides
Price $4.00 plus 15c postage

Step Out and Sell
Price $1.50 plus 15c postage

Helping People Buy
Price $2.50 plus 15c postage

Strategy In Selling
Price $6.00 plus 20c postage

Outlines of Entomology by Dr. Imms
Price $3.75 plus 15c postage

Insects Injurious to the Household and Annoying to Man
Price $2.50. Postage 15c

Toxicology and Hygiene of Industrial Solvents
Price $5.00 plus 15c postage

Poisons—Their Chemical Identification and Emergency Treatments
By Vicent J. Brookes and H. N. Alyea
$3.00—Postage 15c

Insect Dietary
By Charles T. Brues
466 pp.
$5.00—Postage 15c

"A Manual for the Study of Insects"

This book of 401 pages and 633 illustrations is now in the twenty-first edition. Much space is given to accounts of the life histories and habits of insects. By means of the illustrations and analytical tables it is possible to determine the identity and classification of the common North American insects.

The Book Sells for $4.00 plus 15c postage.

Virus Diseases in Man, Animal and Plant

A survey and reports covering the major research work done the last decade.

The book gives a survey of the monetary status of virus investigation with special consideration of the most recent literature, especially foreign. One of the most important books of its kind offered.

Price $5.00 plus 15c postage

"Destructive and Useful Insects"

By METCALF AND FLINT

A new edition just recently off the press that not only deals with classification, identification and history of insects, but discusses the habits and control measures as well as suggested formulae. The book contains 981 pages with 584 illustrations. One of the most complete books of its kind on the market.

Price $7.50 plus 15c postage

Insect Pests of Stored Grain and Grain Products

By RICHARD T. COTTON

Revised edition, 242 pages, 93 illustrations. This book contains a digest of available information on the insect pests of stored grain and milled cereal products and their control. The common and destructive species are described and illustrated. The handling and preservation of grain from insect attack is discussed in logical sequence from the farm until it reaches the food-processing plant.

Insect prevention and control in flour mills, warehouses, and food-processing plants is discussed in detail. Of particular interest to industrial fumigators are the 4 chapters dealing with fumigants. The common fumigants are described and their physical characteristics given. Factors affecting their efficiency are discussed and directions given for their use.

Price $3.00—Postage 15c

WANTED: Established Pest Control Business with a good reputation. Box 19, Pests.

WRITE FOR THESE BOOKLETS

The latest helpful, technical and business releases, issued by manufacturers and supply houses servicing the industry, are available, without cost, by writing the sponsors indicated. Where no supply source is indicated, please write Pests and Their Control, 1200 Oak Street, Kansas City 6, Mo.

ANT BAIT

Circular describes a jelly ant bait with Thallium Sulphate as its toxic ingredient. Sample tube on request.

WRITE LETHELIN PRODUCTS CO., Mount Vernon, N. Y.

FUMIGATION MANUAL

76-page manual describes safe handling and working with "Cyanegg" and on fumigation procedure and insect control. Illustrated.

WRITE E. I. DU PONT & CO., Wilmington 98, Delaware.

INDUSTRIAL CHEMICALS AND SPECIALTIES

WRITE PENN SALT MFG. CO., 1000 Widener Bldg., Philadelphia, Pa.

INSECT COLLECTIONS

WRITE WARD'S NATURAL SCIENCE EST., 302 Goodman St., N., Rochester, N. Y.

SQUILL RAT PASTE

WRITE LENZ LABORATORY, Sycamore, Ill.

METHYL BROMIDE

What it is; what it does; how to use it. Described are dosage schedule for various type pests, methods of application and preliminary precautionary measures.

WRITE WESTVACO CHEMICAL CO., Chrysler Bldg., N. Y. C.

RED SQUILL RAT AND MOUSE KILLER

Booklet describes Red Squill rat and mouse killer. Also illustrated are resale packagse of dog repellent, moth killer, etc.

WRITE OHIO PRODUCTS CO., North Madison, Ohio.

CONTINUOUS INTIMATE BLENDING

A bulletin on the intimate blending of fine chemical, food and insecticide powders. Copies of this 8-page bulletin in two colors may be obtained from SPROUT WALDRON CO., Muncy, Pa.

For the following publications write GEIGY COMPANY, Inc., 89-91 Barclay St., New York City, N. Y.

MECHANISM OF INTOXICATION OF DDT INSECTICIDES IN INSECTS AND WARM-BLOODED ANIMALS

Booklet contains a copy of the material presented by Dr. Paul Lauger, Director of Research, J. R. Geigy, S.A., Basle, Switzerland, at a Joint Meeting of the Army Committee for Insect and Rodent Control and the O.S.R.D. Insect Control Committee. It is a technical discussion concerning the action of DDT insecticides on insects and hence concerns fundamental aspects of pest control. Available on request, this article is of value to those working in the field of chemistry as related to insect control.

DDT COMPATIBILITY CHART

An interesting and instructive three-color wall chart concerning compatibility of Geigy DDT insecticides (dusts and wettable powders) with various materials which are commonly used in pest control schedules is available on request.

"THE THANITE FAMILY"

32-page book of interest to the maker of insecticides. It gives all the latest facts on Hercules' line of toxicants, such as Thanite, Hercules DDT, Thanicol 70+DDT Concentrate, Water-Miscible DDT Concentrate, and Oil-Soluble DDT Concentrate. Contains sections on household sprays, flea powders, information on pest control and pediculosis control, among others. Includes test data and comparative tables on all major insecticide intoxicants and a series of photographs entitled "How to Use a Fly Spray."

Write HERCULES POWDER CO., Inc., Dept. P, Wilmington 99, Del.

WHAT TO DO ABOUT TERMITES AND LYCTUS BEETLES

Illustrated in color, circular presents some interesting facts about termites and lyctus beetles and their control with Permatox A (Pentachlorphenol), 1-10 concentrate.

Write A. D. CHAPMAN & CO., Inc., 333 N. Michigan Ave., Chicago 1, Ill. Ask for bulletin 45-T.

NEW SPOT FUMIGANT

Leaflet describes Acrylon, a new spot or local fumigant. Very effective, it is stated, for use in treating the machinery in flour mills, bakeries and many other places, particularly for the control of Mediterranean flour moth, confused flour beetle, flat grain beetle, cadelle, and similar insects. Not a contact spray, Acrylan, it is further stated, has no deleterious effect on baking qualities of flour and leaves no residual odor.

FORTIFIED RED SQUILL

Circular, which includes bait chart, describes a Fortified Red Squill powder activated and standardized.

WRITE R. J. PRENTISS & CO., 110 William St., New York City 7, N. Y.

HILL TERMITE CONTROL SYSTEMS

For complete particulars, write Hill Termite Control Systems, 20 South Third Street, Memphis 3, Tenn.

FOR EXTERMINATING RATS AND MICE

Circular describes prepared Red Squill baits; will save time of your service men and is economical to use. . . . Information also furnished strychnine-treated, anise-scented mouse seed.

WRITE CO-CO-EXTG. PRODUCTS CO., 877 Fulton St., Brooklyn 16, N. Y.

FILM OF VALUE TO PCO

Circular describes a vivid action film of greatest value to every PCO and opportunities it affords PCO to build good will and better public relations.

WRITE WIL-KIL PEST CONTROL, 522 W. North

GRAIN FUMIGANT

An attractive booklet on Penco Grain Fumigant; is an economical, effective, easily applied fumigant for control of insects attacking stored grain.

WRITE PENN SALT MFG. CO., 1000 Widener Bldg., Philadelphia, Pa.

FOR THE FOLLOWING PUBLICATIONS

WRITE MINE SAFETY APPLIANCES CO., Braddock, Thomans & Meade Sts., Pittsburgh 8, Pa.

RESPIRATOR

Bulletin discusses "Clear-Vue" model Dustfoe Respirator, which it is stated is durable, odorless, noncorrosive and a non-conductor of electricity and heat and gives a proved protection against toxic dusts.

HYDROCYANIC GAS MASK

Bulletin describes Hydrocyanic gas mask with all-vision facepiece.

ALL-PLASTIC GOGGLE

Circular describes a new lightweight, all-plastic goggle which provides comfortable, durable protection for the eyes.

NEW PERFUMING PRINCIPLE FOR INSECT SPRAY TOXIC AGENTS

Fragrance of sprays, up to now one of the unmentionables of insect toxicants, now becomes an asset instead of a liability. Samples may be had by writing

MAGNUS, MABEE & REYNARD, 16 Desbloses St., New York City.

NEW TOXICANT

Reprint of paper on "Velsicol 1068 (20% concentrate)," formerly known as "Vel-Tox," which appeared in Journal of Economic Entomology.

Write VELSICOL CORP., Dept. P., 120 E. Pearson Street, Chicago 11, Ill.

TREATMENT FOR BURNS

Circular outlines following qualities of Hydrosulphosol Ointment for industrial first aid burn treatments:

WRITE DAVIS EMERGENCY EQUIPMENT CO., 45 Halleck St., Newark 4, N. J.

YOU TOO, WOULD BE
A **Larvacide** FAN

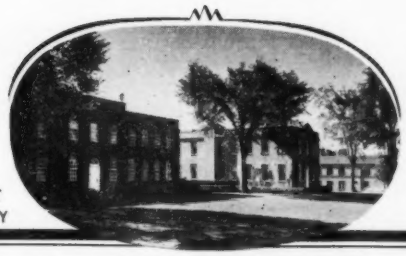
IF YOU COULD SEE . . .

- HOW EASILY IT IS APPLIED
- ROUTS RODENTS FROM THEIR RETREATS
- KILLS THEM WITHOUT CARCASS NUISANCE
- ONLY 1 TO 1½ PINTS PER 1000 SQ. FT. OF FLOOR SPACE FOR AN A-1 RODENT JOB
- WARNING DRIVES AWAY ALL WHO DON'T BELONG
- NO FIRE OR EXPLOSION HAZARD
- ALSO USE LARVACIDE FOR INSECT FUMIGATION

Larvacide Tear Gas Fumigant

Shipped as liquid; Cylinders 25, 50, 100 and 180 lbs., and handy 1 lb. Dispenser Bottles, each in sealed can, 12 to case. Stocked in principal cities. WRITE FOR PCO LITERATURE.

INNIS, SPEIDEN & CO.
117 Liberty Street
New York 6, N. Y.
BOSTON, CHICAGO, CINCINNATI, CLEVELAND, OMAHA, PHILADELPHIA



THE VANDERBILT LABORATORY — EAST NORWALK, CONN.

TO MANUFACTURERS OF
PEST CONTROL POWDERS
FOR **DDT** DUSTS
USE
PYRAX ABB
(PYROPHYLLITE)
The most widely used carrier or diluent in Pest Control Powders
Sample and Booklet on Request
Warehouse stocks available at strategic points throughout the United States

R. T. VANDERBILT CO., Inc.
Specialties Dept.
230 PARK AVENUE • NEW YORK 17, N. Y.

MAGIKIL *Easy* TO USE
ANT BAIT **JELLY**

KILLS ANTS

CONTAINS THALLIUM SULPHATE
Packed in Convenient Service Containers
ANT TRAPS, 1, 3 & 7½ oz. Tubes
10 Lb. Jars

Used professionally it assures customer satisfaction.

Preferred by discriminating PCO's.

For safety in service work use MAGIKIL ANT TRAPS.

Lethelin Products Co., Inc.
MOUNT VERNON — NEW YORK

EXTERMINATORS CHEMICALS

RUMETAN (Zinc Phosphide)
FOR RAT CONTROL

(The ideal poison for
Rats, Mice and Mole Crickets
Effective and Economical)

Sodium Fluoride, White and Tinted
Sodium Silico Fluoride
Pyrethrum Powder
Sodium Arsenate, etc.

Write for Details

Pfaltz & Bauer, Inc.
EMPIRE STATE BUILDING, NEW YORK

FOR THE FOLLOWING PUBLICATIONS
WRITE AMERICAN CYNAMID & CHEMICAL CO., 30 Rockefeller Plaza, N. Y. 20, N. Y.

FIRE IN A BUILDING UNDER FUMIGATION—PROCEDURE

Is the title of an informative bulletin on the subject. Also included are answers to some fumigation questions of interest to every PCO.

FUMIGATION SAFETY RULE

BULLETIN 80.

EFFECT OF HYDROCYANIC ACID ON FOODSTUFFS

REMOVAL OF PHOTOGRAPHIC FILMS AND PAPERS BEFORE FUMIGATION

BULLETIN 88.

EDUCATE THE DOCTOR IN FUMIGATION FIRST AID PROCEDURE

ELECTRIC FANS HAVE SEVERAL USEFUL FUNCTIONS IN FUMIGATION WORK

BULLETIN 84.

DDT FORMULATIONS BULLETIN DISCUSSES

BULLETIN 94.

FUMIGATOR'S FIRST AID KIT

BULLETIN 93.

DEVELOPMENT OF HCN FUMIGATION

BULLETIN 96.

METHYL ORANGE TEST PAPERS

BULLETIN 95.

MECHANICAL MEANS FOR QUICK VENTILATION OF FUMIGATED SPACES

BULLETIN 97.

CALCIUM CYANIDE FOR RAT CONTROL

THE MODERN TREATMENT OF CYANIDE POISONING

NEW EDITION FUMIGATION MANUAL NOW AVAILABLE

ELECTRIC FANS

Bulletin discusses value of electric fans in connection with fumigation work, also some pertinent thoughts on the Schafer Prone Pressure Method of Resuscitation, etc.

FUMIGATION MISCELLANY

Bulletin calls attention to fumigator's first aid kit, answers some questions of interest to every fumigator, offers some pertinent fumigation safety suggestions.

FOR THE FOLLOWING PUBLICATIONS
WRITE WOOD TREATING CHEMICAL CO., 5137 Southwest Ave., St. Louis 10, Mo.

WOOD TREATING CHEMICALS

Leaflet, color-illustrated, describes pentachlorophenol-based wood-treating chemicals available in ready-to-use or concentrated form for wood preservation, termite prevention and dimensional control. Also discussed are such methods of wood impregnation as: vacuum-and-pressure, hot and cold open tank and cold open tank.

Write WOOD TREATING CHEMICALS CO., 5137 Southwest Avenue, St. Louis 10, Mo.

WOOD PRESERVATIVES

Discussed are several products for the control of decay, blue stain, termites, powder post beetles, swelling, warping, checking, shrinking, moisture absorption, grain raising. Illustrated.

TERRATOX CONCENTRATES

Circular depicts damage by termites, Lyctus Beetles and decay.

RAT GLUE AND BOARDS CIRCULAR

Discusses use of rat glue boards as a means for effective rat control, etc.

WRITE ELKAY PRODUCTS CO., 323 West 16th St., New York City.

A 115 page DDT Bibliography, giving formula, rate, method of application on household insects and agricultural purpose.

Write J. T. BAKER CHEMICAL CO., Phillipsburg, New Jersey.

FOR THE FOLLOWING PUBLICATIONS
WRITE SOLVAY SALES CO., 40 Rector St., N. Y. C.

SOLVAY PRODUCTS

48-page booklet in colors and illustrations covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

FREE COPY.

MOTH DAMAGE PREVENTIVE

Leaflet discusses value of para-dichlorobenzene in moth control, directions in using, and its value as a deodorant.

PYRETHRUM - DERRIS - RED SQUILL PRODUCTS

Leaflet describes foregoing insecticides with special bait chart for use in connection with powdered red squill.

WRITE R. J. PRENTISS & CO., 110 William St., New York City 7, N. Y.

NEW SAFETY EQUIPMENT CATALOG

The new, complete 178-page 6-B Catalog has just been published by Mine Safety Appliances Company, describing and illustrating the complete range of M.S.A. safety equipment for industrial application, including many new products.

A 6-page introductory section illustrates and describes the complete research laboratories and plant facilities of Mine Safety Appliances Company.

The regular edition of the 6-B Catalog is in its usual 8½"x11" size. Also available is a new, handy, pocket-size edition of this catalog 5"x6½", containing the same material and number of pages as the large edition, but in the miniature size.

Copies may be secured by writing to Mine Safety Appliances Company, Pittsburgh 8, Pa.

FOR THE FOLLOWING PUBLICATIONS
WRITE SPARHAWK CO., Sparkill, N. Y.

ANIMAL ODORS AS REPELLENTS AND ATTRACTANTS

Incorporation of the glandular extraction of the skunk into commercial repellents to add to their potency and efficacy is discussed in an interesting article, entitled "The Odor of an Enemy, the Cat, Frightens Mice Away," by Charles V. Sparhawk.

"SKUNKADORA" . . . DEODORANT

A simple method to eliminate odors.

INSECT TRAPS

Bulletins describe traps for ants and roaches, with suggestions for their use.

WRITE O. E. LINCK CO., Montclair, N. J.

FOR THE FOLLOWING PUBLICATIONS
WRITE ROHM & HAAS CO., W. Wash. Sq., Philadelphia, Pa.

SYNTHETIC ROACH POWDERS

Research material apropos thiocyanates in powdered form for roach control in place of pyrethrum—describes the development and properties of roach, ant and bedbug powder based on Lethane A-70.

RHothane D3 and DDT IN INSECTICIDAL FORMULATIONS

Presents properties of both RHothane D3 and DDT, together with information regarding the formulation of household and livestock sprays based on RHothane and DDT, or on combinations of these with Lethane 384 and Lethane 384 Special.

SPECIAL ROACH POWDER

Circular describes a roach powder (containing Lethane A 70) which, it is stated, is fast acting, positive in kill and will not deteriorate for at least eight weeks after application. The powder is non-toxic to warm-blooded animals and may, therefore, be used in dairies, packing and food handling plants, homes, etc.

WRITE A. D. BOSLEY CO., 3048 W. Penn, Indianapolis 5, Indiana.

NEW RAT BAIT

The Vegex Company, located at 175 Fifth Avenue, New York 10, N. Y., puts up this Dry Gravy in 5-pound packages only. One 5-pound package makes 5 gallons of finished Gravy. Prices and other pertinent data on Vegex Rat Bait may be had by writing the company.

FOR THE FOLLOWING PUBLICATIONS
WRITE HERCULES POWDER CO., Wilmington, Delaware.

SIX TOXICANTS

Release describes six different types of toxicants, combinations of a type of Thanite and DDT or DDT.

INSECT POISONING AGENTS

"Thanite, quick death to insects" is a 12-page booklet. It discusses the development and applications of the product.

RED SQUILL FOR RAT CONTROL

An informative brochure on the value of red squill in control of rats, mice; its effect on domestic animals and man.

WRITE S. B. PENICK & CO., 50 Church St., N. Y. C. 7.

PIGEON-PROOFING

Folder describes pigeon-proofing invention which manufacturer claims will completely and decisively eliminate the pigeon nuisance.

WRITE STANLEY'S ROOFING & BLDG. SERVICE, INC., 523 W. 184th St., N. Y. C.

Phosphorous Paste killing power; baits, combinations, amounts for the control of roaches, mice, rats are discussed.

WRITE JOHN OPITZ, INC., 50-14-39th St., Long Island City 4, N. Y.

FOR THE FOLLOWING PUBLICATIONS
WRITE A. D. CHAPMAN & CO., 333 No. Michigan Ave., Chicago 1, Ill.

PRESERVATION OF LUMBER, POLES, POSTS, PLYWOOD WITH PENTACHLORPHENOL

This bulletin gives a brief summary of the properties, use to date, and recommendations for the preservative treatment of lumber, poles, posts, and other forest products with Permatox A.

BULLETIN 43-A.

CONTROL OF TERMITES-POWDER-POST (LYCTUS) BEETLES-DECAY

FOR THE FOLLOWING PUBLICATIONS
WRITE NOTT MFG. COMPANY, Mount Vernon, New York.

NEW ANT TRAP

Manufacturer claims many new features such as no turning or twisting necessary; four openings; larger trap; contents ½ greater than any other competitive brand.

WRITE FOR YOUR FREE SAMPLE OF ANT TRAP.

THALLIUM PRODUCTS

Circular calls attention to ant traps and jelly bait for control of ants—house or garden; mice seeds, rat paste, etc.

FOR THE FOLLOWING PUBLICATIONS
Reprint of foregoing may be had by writing John Powell Co., 1 Park Avenue, N. Y.

DDT IS POISONOUS

An article by Herbert O. Calvery, Food and Drug Administration, which discusses tolerance level deemed necessary when it is used on human food.

DDT

Labeling Instructions issued by Insecticide Division, U. S. Department of Agriculture, W. G. Reed, Chief.

NH DUST

Leaflet describes new organic insecticide compound which, it is stated, may be used where non-poisonous insecticides are mandatory. Effective against roaches, silverfish, ants, fleas, lice and many other common pests found in the home, industrial and food storage plants.

NEW RECHARGEABLE FLASHLIGHT BATTERY

Where flashlights are used regularly, the rechargeable feature of the Storage Battery is said to provide greater economy and brighter, sustained light.

WRITE IDEAL COMMUTATOR DRESSER CO., Syracuse, Ill.

NEW BIG 6 LINE OF WIZO MOTH KILLER VAPORIZERS AND CRYSTALS

Catalog describing each product fully and prices available.

WRITE ELKAY PRODUCTS CO., 323 West 16th St., N. Y. C.

FOR THE FOLLOWING PUBLICATIONS
WRITE DOW CHEMICAL CO., Midland, Michigan.

METHYL BROMIDE APPLICATORS AND SUPPLEMENTARY EQUIPMENT

Profusely illustrated booklet describes applicators for use with cylinders; application of methyl bromide by direct weighing of cylinders; tubing and piping; piping system for mill and warehouse; sealing materials; fans; tarpaulins; safety equipment.

FUMIGATION AND PLASTICS

Discusses use co-ordination of such diverse chemical products as plastics and fumigants in connection with infested bagged grain, seed, packaged or boxed foodstuffs.

METHYL BROMIDE FOR INFESTATION CONTROL

Reprint of an article by J. Carl Dawson which discusses insect control in the flour mill and warehouse with methyl bromide. Illustrated.

RESPONSE OF RATS MAINTAINED ON DIETS FUMIGATED WITH METHYL BROMIDE

FIRST AID AND TREATMENT FOR METHYL BROMIDE EXPOSURE

This valuable booklet, prepared by Dr. H. H. Gay, Medical Director, The Dow Chemical Company, Midland, Mich., outlines first aid and treatment for Methyl Bromide exposures.

BOX CAR FUMIGATION

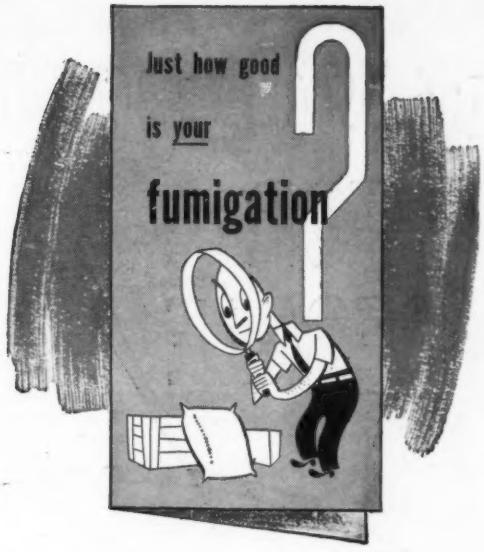
Folder describes box car fumigation with methyl bromide, giving details as to: methyl bromide application, dosage, exposure period, temperature, aeration, precautions.

VICTOR GLADIATOR METAL RAT TRAP

WRITE ANIMAL TRAP CORP. OF AMERICA, Lititz 1, Pa.

AVAILABLE FOR

YOUR MAILING LIST



it tells how to measure fumigation results!

This new leaflet—recently prepared—carries an important message to every user of fumigants. You'll want to send a copy to each of your customers—and potential customers. It explains and illustrates a simple, quick method of measuring fumigation results regardless of the fumigant used. It tells how to determine whether all pests in all hiding places have been killed. The test is made in a few moments and costs practically nothing.

Recent studies prove the importance of being sure that a complete kill has been obtained during a fumigation. Such research indicates that survivors are the main source of reinfestation—rather than new arrivals brought in with incoming supplies.

Sufficient copies of this leaflet for sending to your mailing list are available without charge upon request. They are envelope stuffer size, 3 x 6¼, handsomely printed in two colors with space for your firm imprint on the back.

Write today for sample copy—or order enough for your needs—at no cost to you.

The penetrating fumigant

Methyl Bromide

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND AGRICULTURE

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle

AEROSOL BOMBS FOR RESALE

Filled with Standard Approved Insecticide—2% Pyrethrum Extract, 3% D.D.T., 10% Solvents and 85% Freon.

At prices which will enable Distributors to handle the bombs at attractive profits.

Supplied with Distributor's label if ordered in sufficient quantities.

Packed 24 to a Shipping Carton.

HI-TOX, MORTICIDE and SUPER-MORTICIDE are now obtainable with D.D.T. added. NO INCREASE IN OUR PRICES.

D.D.T. Solutions containing from 5% to 50% D.D.T. Technical Grade.

D.D.T. Powders with 10% to 50% D.D.T. Technical Grade.

MORTOLIN—Concentrate for Moth-proofing Compounds.

Write our office nearest you for full particulars.

Associated Chemists, Inc.

1906 N. HALSTED STREET
CHICAGO 14, ILLINOIS

EASTERN OFFICE: Velsor Wright Company, 8 West 40th St., New York 18, N. Y.
TEXAS OFFICE: The Carroll Company, 1323 Wall Street, Dallas, Texas